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Special Report

October 2009

# Ontario's Electronic Health Records Initiative

Office of the Auditor General of Ontario

## Office of the Auditor General of Ontario

To the Honourable Speaker
of the Legislative Assembly

I am pleased to submit to you my Special Report on Ontario's Electronic Health Records Initiative to lay before the Assembly, in accordance with Section 17 of the *Auditor General Act*.

Jim McCarter
Auditor General

October 2009

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Special Report

# Ontario's Electronic Health Records Initiative

## Background

In September 2000, Canada's federal and provincial ministers of health agreed to develop an Electronic Health Record (EHR)—defined by the Ministry of Health and Long-Term Care (Ministry) as "a secure and private lifetime record of an individual's health and care history, available electronically to authorized health providers." All 10 provinces and three territories have been working with the assistance of the federal government to develop EHR systems that, it is hoped, will eventually interconnect, to allow, for instance, a physician in Toronto who is treating a patient to instantly access that patient's health records, whether that patient lives just down the street or in another province.

One Canadian study estimates it will cost about $10 billion to fully develop an EHR for all Canadians but that such a system could save the country $6 billion in health-care costs each year. Canadian Health Infoway (Infoway), an organization created by the federal government in 2001 to help the provinces develop EHRs, concurs with these estimates. The Infoway's stated goal is that 50% of Canadians will have an EHR by 2010 and 100% by 2016. Although it is funded by the federal government, the Infoway reports to all federal, provincial, and territorial deputy ministers of health.

The Infoway estimates that there are about 2,000 health-care "transactions" in Canada every minute, or more than 1 billion transactions each year, including:

- 440 million laboratory tests;
- 382 million drug prescriptions;
- 332 million visits to physicians' offices;
- 35 million diagnostic images; and
- 2.8 million in-patient hospitalizations.

The vast majority of these transactions are recorded on paper or other media, such as x-ray film, and then physically stored. The Ministry envisions a system where all of these records could eventually be collected, stored, and retrieved in digital form, and then made available on-line to authorized health-care providers, with all Ontario citizens having access to their own EHR.

In order to work as envisioned, an EHR system requires four fundamental components:

1. a secure network on which patient data can travel;
2. applications that enable users to record, store, and retrieve that patient data;
3. patient data, such as treatment history, test results, diagnostic images, and prescribed medications, in digital form; and
4. terminals or access points from which users can input and retrieve patient data.

In Ontario, planning for EHRs began in the late 1990s. In 2002, the Ministry created the Smart Systems for Health Agency (SSHA). SSHA was to

oversee the creation of a secure electronic network and the connecting of the medical community to this network, while the Ministry was to be responsible for the overall EHR strategy and the development of the clinical applications and associated databases that would run on the network. The province has spent more than $1 billion since 2002 on EHR-related activities, with SSHA accounting for about $800 million of these expenditures.

In September 2008, the Ministry created the eHealth Ontario agency to take over both SSHA and the Ministry's own EHR initiatives. The agency's mandate is to have an Electronic Health Record in place for Ontarians by 2015.

Shortly after it began operations, the eHealth Ontario agency found itself embroiled in controversy when it was widely reported that it had handed out millions of dollars in untendered contracts to consultants. This controversy led to the resignation of the eHealth Ontario agency's CEO and the Chair of the board of directors.

A more detailed chronology of events relating to the province's EHR initiative is provided in the Appendix.

### REQUEST BY THE MINISTER AND THE STANDING COMMITTEE ON PUBLIC ACCOUNTS

In response to questions in the Legislature in April and May 2009 regarding procurement issues at the eHealth Ontario agency, both the Premier and the Minister of Health and Long-Term Care advised the House that one of the audits already under way by my Office related to eHealth. On June 2, 2009, the Minister called me to ask when the results of this audit could be made public.

I advised the Minister that under section 12 of the *Auditor General Act*, I was required to report the results of all audit work for the year in my Annual Report, which is normally tabled in early December. However, I also advised the Minister that if he was to make a formal request under section 17 of the Act, then I would be able to issue this audit as a special report when it was completed and make it public. Later that same day I received a letter from the Minister formally requesting under section 17 of the Act that I issue this audit as a special report as soon as it was complete and make it publicly available at that time.

On June 3, 2009, the day following the formal request from the Minister, the Standing Committee on Public Accounts met and passed the following motion by unanimous vote:

> That following the Auditor General's completion of his value-for-money audit of eHealth Ontario, the Standing Committee on Public Accounts of the Legislative Assembly of Ontario calls on the Auditor General to release that chapter of his Annual Report in a Special Report to the Speaker; and that prior to the tabling of this report, the Auditor General may inform the Deputy Minister of Health and Long-Term Care of his opinions, observations, or recommendations.

## Audit Objective and Scope

The objective of our audit, which was established months before the controversy arose, was to assess whether the Ministry of Health and Long-Term Care (Ministry) and the new eHealth Ontario agency had adequate systems and procedures in place to help ensure that an Electronic Health Record (EHR) for Ontarians was being implemented in a cost-effective manner, and to assess progress in meeting the government's commitment to develop an EHR.

In conducting our audit work, we consulted with the Office of the Auditor General of Canada and five other provincial legislative audit offices that were also examining EHR-related activities in their respective jurisdictions. Each of the provincial audit offices planned to table their own EHR report in their provinces. The federal Auditor General

anticipates tabling her report, which may include observations from the various provincial reports, in Parliament in spring 2010.

We did not examine the privacy aspects of Ontario's EHR initiative. The Office of the Information and Privacy Commissioner conducted a comprehensive privacy review of SSHA in 2007 based on the *Personal Health Information and Privacy Act, 2004*. We hired a privacy consultant recommended by the Commissioner to help us determine what privacy-assessment work we should consider, given the review that had already been undertaken. The consultant observed that the eHealth Ontario agency's work on privacy was still at a preliminary stage and concluded that it would not be useful to review it at this time. We accepted this recommendation and, accordingly, excluded privacy from the scope of our audit.

The documents we examined included applicable legislation and regulations, requests for proposals, submitted proposals from vendors, proposal evaluations, contracts, invoices, payment records, expenditure reports, board minutes, project charters, progress reports, network utilization data, service agreements, correspondence, and agreements respecting the relationship between the Ministry and both SSHA and the eHealth Ontario agency. In addition, we met with many EHR stakeholders, both inside and outside the government, including members of the former senior management of SSHA, the management of the eHealth Ontario agency, the eHealth Ontario agency's board of directors, the former CEO of the eHealth Ontario agency, and the former Chair of the eHealth Ontario agency. We also talked to representatives of some of the consulting firms involved, who willingly provided us with certain additional documentation.

It should be noted that our observations about procurement practices involving private-sector consultants apply only to the actions of public servants. They are in no way intended to pertain to or reflect on any practices that consultants followed or their performance.

Our audit followed the professional standards of the Canadian Institute of Chartered Accountants for assessing value for money and compliance. We set an objective for what we wanted to achieve in the audit and developed audit criteria that covered the key systems, policies, and procedures that should be in place and operating effectively. These criteria were discussed with senior management. We then designed and conducted tests and procedures to address our audit objective and criteria.

We noted that while Internal Audit completed due-diligence reviews of two of the larger EHR projects at the planning stage before they were approved to proceed, it conducted no other audit work of significance at the Ministry regarding its eHealth activities, at SSHA, or at the eHealth Ontario agency. Accordingly, we did not rely on the work of Internal Audit in conducting our work.

## DELAY IN STARTING OUR AUDIT

We typically complete several value-for-money audits annually at the Ministry of Health and Long-Term Care, and normally we receive the full co-operation of Ministry staff. Unfortunately, this was not the case for this audit.

I first wrote to the Deputy Minister in the late summer of 2008, advising him of this audit. I stated that the EHR was to be the subject of the audit. We had planned on starting fieldwork in the fall. As our planning proceeded, we requested access to the Ministry's eHealth Program Branch office and working accommodations for our field auditors, as is our normal practice. Despite repeated efforts over the course of several months, we were granted neither access nor accommodations until early February 2009.

Initially, the reason cited for the lack of access was space limitations, so my staff conducted research and received information relating to our audit from the Ministry while waiting for an acceptable working area to be freed up for their use. However, once the space was finally made available in late December, we were surprised to learn that

access was still being denied us, this time on the grounds that the Ministry had not yet agreed to the scope of our audit or to the overall audit objective of assessing progress on its EHR initiative. Senior management informed us that under the new eHealth Ontario agency strategy, in development at the time, the government planned to focus on "quick-win" projects—in diabetes management, medication management, and wait times—that had more immediate clinical value. We were told that, since the Ontario government "does not have an EHR strategy," but rather is working on a broader eHealth strategy, its progress on the EHR should not be our focus, and, until this was resolved, we did not have the Ministry's approval to commence our audit fieldwork. We were granted access only after I intervened directly with the Deputy Minister.

## Summary

The focus of members of the Legislature and the media with respect to Ontario's Electronic Health Record (EHR) initiative over the last few months has primarily been on the awarding of contracts at the eHealth Ontario agency without an open competitive process. In essence, allegations were made that contracts were sole-sourced to a number of consulting firms or individual consultants by the CEO of the eHealth Ontario agency or her appointees. Our work indicated that this was undoubtedly the case. But we also noted questionable procurement practices at the Ministry of Health and Long-Term Care's (Ministry's) eHealth Program Branch and at the Smart Systems for Health Agency (SSHA), albeit to a lesser extent. However, the main focus of our work as originally planned was not on consultant procurement but rather on the overall progress of the EHR initiative given the $1 billion in EHR expenditures made over the past seven years. In this summary, we first discuss our observations on that issue, then our observations on procurement.

It is important to remember what the "e" in eHealth stands for—"electronic." In other words, Ontario's EHR initiative is essentially a number of large, complex, and interrelated information technology (IT) projects. The most important standard for judging the ultimate success of any IT project is not whether it was delivered on time or on budget, or what technology was used, but rather whether the system meets the needs of its users. Although some applications, such as Telemedicine, have been developed, there is no doubt that Ontario does not yet have an eHealth system that is meeting the needs of medical practitioners or the public. In terms of EHR progress, the Canada Health Infoway (Infoway) has reported that Ontario is near the back of the pack compared to most other provinces.

About $800 million of the total $1 billion that has been invested in the EHR initiative was incurred by SSHA, primarily in building and operating a private IT network and connecting the medical community to it. The value of this investment, at least to date, has not been realized. Part of the problem lies in operational issues, and we noted areas where costs could have been reduced. But our main concern is that the network remains significantly underutilized because as yet there is insufficient health-related information on it. Although some of the broader EHR applications were begun earlier, many of the critical EHR application projects were not begun until 2008. Responsibility for this rested with the Ministry.

We grouped our observations into five main themes: strategic planning, oversight, progress on EHR projects, the use and procurement of consultants, and expenditure management.

### STRATEGIC PLANNING

Upfront strategic planning, essential to a major initiative like the EHR, had not been properly completed until years after the government launched the initiative in the early 2000s. What such a strategic plan should have clearly defined were:

- the specific needs of users;

- how these needs would be met;
- who would be accountable for delivery;
- what the timelines would be; and
- how much each component of the system was expected to cost.

It was only in March of 2009 that the first-ever eHealth strategic plan was finalized and approved. Although we welcome this plan, it is an overall eHealth strategic plan, not an EHR plan. We believe it needs to be supplemented with a plan that more specifically addresses the 2015 EHR target.

SSHA's job—to use a highway transportation analogy—was to build and operate a well-maintained, secure "super-highway" to which medical practitioners would be connected and on which the EHR and other eHealth applications would run. However, partly because of shortcomings in upfront strategic planning, the clinical information that medical practitioners need for decision-making is not available. The underlying applications with the clinical information (that is, the vehicles and their loads) simply are not there. With few vehicles capable of travelling on the highway and few goods to deliver, it is not surprising that, notwithstanding the approximately $72 million in direct operating costs annually being spent to keep the highway up and running and the $800 million incurred by SSHA to date, there has been little traffic on it. It appeared to us that the Ministry did not anticipate the risk of having the IT infrastructure operational but having no applications available for some time—a situation that may have been avoided had there been an overall strategic plan driving the EHR initiative from the very beginning.

In addition, the fact that SSHA was participating in an initiative whose endpoint was to deliver an Electronic Health Record to all Ontarians was not satisfactorily addressed. SSHA developed its private network for use only by the health-care community; it will need to integrate securely and effectively with other networks such as the Internet in order to link all Ontarians as users.

## OVERSIGHT

Throughout the years, oversight of the EHR initiative has not been effective. This was reflected in the relationship between the Ministry and SSHA, which was unproductive. This was also reflected in governance problems at the new eHealth Ontario agency that enabled the CEO to wield considerable power.

The decision to have two entities at arm's length from each other deliver the EHR solution—SSHA responsible for the underlying infrastructure and the Ministry's eHealth Program Branch responsible for the overall EHR strategy and the related applications—was, in our opinion, inherently problematic. The success of this plan depended on both parties having a cohesive and co-operative working relationship. This was never the case. There was little co-ordination or co-operation between SSHA and the Ministry's eHealth Program Branch. We were informed by numerous parties on both sides that the relationship was marred by mutual mistrust and confusion over roles and responsibilities. The dysfunctional relationship between the two entities and the evident discontent of the medical community should have "raised the red flag" sooner that something needed to be done.

SSHA has been blamed for spending more than $800 million and getting little in return. In essence, SSHA has been made the scapegoat for the lack of progress to date on the whole EHR agenda. In our opinion, this is somewhat unfair. SSHA must certainly take its share of the responsibility for building a system that has consistently had operational problems and could have been run more cost-effectively. And while SSHA did begin to examine the potential of advances such as more secure Internet technologies that could contribute to fixing the problems, these have yet to be implemented. Deloitte Consulting highlighted user dissatisfaction with the network in its 2006 review of SSHA, reporting that there had been an "erosion of confidence" in the user community. However, SSHA did develop and deliver a secure electronic network,

and we suspect that users would have been much more willing to put up with network operational issues if the network was providing them with more useful clinical information.

Although we support the eventual decision to make the delivery of the EHR system the responsibility of just one entity, we believe that more rigorous oversight of the eHealth agenda would have resulted in this decision being made much earlier. Two factors contributed to such oversight not being sufficiently rigorous—SSHA's status as a Crown agency, operating in a more arm's-length capacity; and the lack of clearly defined eHealth deliverables linked to an approved strategic plan. We also noted that the decision to give responsibility for the EHR to a new agency in the absence of effective mechanisms for monitoring the agency's operations empowered the agency's CEO and her appointed team, allowing them to bypass standard procurement practices and make the decisions and award the contracts that so captured public attention. We present examples of these issues in the The Procurement and Use of Consultants section of this Summary.

## PROGRESS ON EHR PROJECTS

Progress on EHR projects has been slow, and details of implementation delays are provided on a project-by-project basis later in the report. Two overall observations were:

- Although by March 31, 2007, more than $400 million had been spent building the EHR network and connecting the health-care community to it, investments in the EHR applications that would run on the network amounted to only about $100 million. As well, the medical community can use few of these applications as yet because most have yet to be completed. Only in the last year, with the completion of the eHealth Strategic Plan and the approval of the funds necessary to execute it, have investments in EHR applications approached the level of investment in the network itself. Work on the applications should have proceeded more in tandem with work on the network, but the timing of application development was out of sync with the spending on the IT infrastructure.
- From October 2008 through June 2009—the transition period when the eHealth Ontario agency was established—many EHR projects were put on hold awaiting clarification as to their scope and direction. Revised project charters for all EHR projects were not completed until July 2009. This contributed to the pushing back of a number of expected completion dates for various projects.

  It should be noted that the recent replacements of eHealth Ontario's board Chair and CEO mark the fourth such overhaul of leadership at eHealth Ontario and its predecessor, SSHA. Each of these overhauls brought with it its own period of transition where progress on the initiative's objectives was slowed or, at times, halted. Such slowdowns are somewhat to be expected, as a new management team naturally must assess the organization it has inherited before restructuring it in a manner that will mitigate the problems and errors that caused the management turnover in the first place. Nevertheless, with each such change there is a price to be paid in terms of lost time, little perceived benefit for the costs incurred during the transition period, weakened employee morale, and loss of stakeholder confidence in the organization.
- EHR projects have for the most part not met expectations. We questioned the depth of the upfront planning before EHR projects were initiated. Such planning should have included identifying all of the resources—staff hours, consultant hours, and other costs such as equipment and software—needed to complete the projects and a strategy for procuring them in the most economic and efficient manner. Instead, resource needs were all too often identified and filled on an ad hoc basis as

projects progressed from one phase to another. Further, these resource needs were usually met via costly short-term consulting engagements that often were continuously renewed. In addition, project expenditures and deliverables were tracked separately without an adequate oversight mechanism to integrate this information and thus ensure that deliverables were completed as the related costs were incurred. We also noted projects with significant "scope creep," projects with unrealistic timelines that could not be met, projects where the requirement for integration with other components of the EHR was not adequately considered, and perhaps most importantly, projects where the end product is not yet meeting user requirements.

- The network built by SSHA is not being managed cost-effectively. For instance, the agency is paying $2.5 million per month to maintain circuits that are either inactive, almost inactive, or significantly underutilized.

## THE USE AND PROCUREMENT OF CONSULTANTS

### Extent of Reliance on Consultants

Although we acknowledge that the highly technical nature of the EHR initiative necessitates some degree of specialist consulting advice, the fact that the development of an EHR had been on the government's agenda as far back as the early 2000s caused us to question the heavy, and in some cases almost total, reliance on consultants. This reliance continued to increase over time. This was particularly the case at the Ministry, which in 2007 consolidated all of its eHealth projects into an eHealth Program Branch. By 2008, the Branch was engaging more than 300 consultants compared to fewer than 30 full-time ministry employees—even a number of senior management positions were held by consultants. Consultants were not only managing other consultants but also at times had the authority to hire more consultants, sometimes from their own firm. Numerous consultants had been retained for a number of years to work on a variety of different assignments. For instance, one consultant had been employed for seven years and his firm had been paid $2 million; another had been employed for six years and the firm had been paid $2.4 million, and $6.9 million had been paid with respect to six other consultants who have been engaged continuously on EHR projects since 2005.

### Procurement

As noted at the beginning of this Summary, it was the procurement practices of the eHealth Ontario agency that first captured the attention of the media and the Legislature. However, we found that procurement problems were not exclusive to eHealth Ontario; the Ministry's eHealth Program Branch and SSHA also engaged in certain questionable procurement practices.

#### Procurement at eHealth Ontario

In our opinion, the allegations that contracts were awarded to certain consultants and vendors without giving other firms the chance to compete for the business are largely true. In fact, we estimate that two-thirds of the value of all eHealth Ontario contracts was sole-sourced. Allegations that the agency showed favouritism in awarding some of these contracts are also true. In addition, we were aware of the allegations that "party politics" may have entered into the awarding of contracts and that those awarding the contracts may have obtained a personal benefit from the firms getting the work—but we saw no evidence of this during our work.

The CEO of the eHealth Ontario agency was appointed in October 2008 and reportedly told that there were serious problems with the eHealth agenda and that overcoming these problems required urgent action. She wanted to build her own team—people she had worked with in the past or whom she personally recruited—rather than

rely on ministry or SSHA staff or their consultants. The CEO felt she had the implied, if not the formal, authority to do whatever was necessary to get the job done. If this meant personally selecting the firms and individual consultants that she wanted, so be it. In our opinion, the CEO's prior relationships with a number of the firms and individuals were one of the factors in her hiring and procurement decisions, and this does constitute favouritism.

We do not accept "urgency" or the fact that the consultants had relevant experience as valid reasons for this sole-sourcing of contracts; neither do we accept the contention that the procurement policies in place, or Treasury Board's earlier granting of a short-term exemption from competitive tendering for certain contracts, justified the sole-sourcing.

The eHealth Ontario agency had procurement policies that allowed exceptions to competitive tendering when, for example, the need for the work was so urgent that there was no time to competitively tender or only one vendor was available for the service required. However, the sole-sourced contracts we reviewed did not, in our opinion, meet any of these exception criteria. For example:

- An external recruiting firm was hired directly by the CEO on a sole-sourced basis for $1 million to help in the hiring for 15 senior management positions. In our opinion, there was no reason why this contract could not have been competitively tendered. As well, the eHealth Ontario agency paid most of these fees up front. We noted that only five of the 15 positions were filled when the contract was terminated—yet no money had been requested by or returned to the eHealth Ontario agency.
- For one significant contract, there was an appearance of a competitive-tendering process, when in reality senior management already knew to whom it wanted to award the contract. After receiving responses to an invitation to tender for the project, a firm was selected as the successful bidder even though its bid price of $3.1 million was more than five times higher than another qualified bidder's price of $570,000 and well above the project's approved budget of $700,000. Only this highest-bidding firm was asked to resubmit its bid to bring it in line with the approved budget. The firm revised its proposal, reduced its total quote to $737,000, reduced the time frame over which the work would be performed, and significantly reduced the resources it would devote to the two main deliverables.

  The firm's original proposal was to employ essentially all of its available staff. Although the revised proposal removed three of these personnel, at about the same time the firm submitted an unsolicited proposal to engage these three consultants. The next day, the eHealth Ontario agency prepared an exception-to-competitive-procurement request, and these three consultants were procured for $594,000 to conduct the proposed work, with the work to commence on the same date as the work under the original contract. In our opinion, the agency's intent was obviously to award this work to the favoured firm, regardless of the responses received to the request for proposals it issued.

We also considered the extent to which the eHealth Ontario agency's board Chair and board members were aware of the procurements that management was making. Had they condoned, either directly or implicitly, how business with the agency's suppliers was being conducted? We reviewed all board minutes and other related documentation and had discussions with the board as a whole, with the board Chair, and with individual board members.

We believe that the Chair, an individual with a credible record in health-care transformation, accepted the position of Chair of the eHealth Ontario agency in good faith and that his sole interest in doing so was to help move the EHR agenda forward. Although we saw no evidence that the

board asked for any details on procurements, we believe that the board was under the impression, based on information provided to it, that consultants and other vendors were being procured in accordance with established policies.

### Procurement at the Ministry's eHealth Program Branch

The eHealth Ontario agency was not alone in using questionable procurement practices. At the Ministry's eHealth Program Branch, we noted the following:

- Over a four-month period, a consultant holding a key management position inside the Ministry was involved in awarding five additional contracts with a total value of $1.3 million to the consulting firm he was associated with.
- Vendor proposals were not properly evaluated for a significant number of the contracts we sampled, and many were approved without sign-off by all appropriate parties. For example, a single individual chose which vendors to invite and made the sole decision on whom to hire for more than 30% of the contracts we sampled. We noted contracts that were signed on the same date as the closing date of the request for service, and work performed prior to the contracts being awarded. These are indications that, even if a competitive process was followed, it was more of a formality than a true competition—the decision as to which firm should get the work had already been made.
- The Ministry's procurement policies stipulate that contracts above a certain amount should be put to tender. We found that contracts were often subdivided into multiple contracts for smaller amounts, which resulted in the tendering requirements being bypassed.
- Ministry requests-for-services proposals were often incomplete and unclear as to what deliverables were expected. This at times resulted in large variances in the submitted proposals' projected costs. In one noteworthy case, the Ministry received two proposals in response to a request for services—one with estimated costs of $60,000 and the second with estimated costs of $600,000. The Ministry selected the most expensive vendor without any documented explanation. In other cases, even for large contracts that, with extensions, accumulated to over $1 million, the deliverables were not clearly specified and it was often difficult to determine what work had been performed with respect to those contracts.
- The Ministry allowed one consulting firm, which was initially awarded work on several projects through an exemption from competitive procurement, to obtain significant follow-up work, largely owing to its entrenched position. For one project, it was awarded 10 related contracts for a value totalling $4.1 million over a period of 24 months and eight related contracts associated with another project for a total of $2.9 million over a period of eight months.

To sum up, too many procurements at the eHealth Ontario agency and, to a lesser extent, at the Ministry's eHealth Program Branch and at SSHA were the product of rushed decision-making; the acceptance of expediency over thoroughness; the routine defence that the work was of an emergency nature and therefore justified the bypassing of normal procurement controls; procedural shortcuts; poor, absent, or contradictory documentation; and, of particular concern, the concentration of decision-making power in the hands of a few individuals with no compensating controls to ensure their decisions were appropriate. Sound and reasonable policies were in place to ensure that all suppliers could fairly compete for government business and that tax dollars would be prudently spent, but all too often the rules were not followed. We have come across this in other audits—ineffective

oversight and broken rules go together like a horse and carriage.

## EXPENDITURE MANAGEMENT

At both agencies and the Ministry's eHealth Program Branch, we noted that policies and procedures for approving and monitoring payments to consultants were inadequate. For instance, consultant invoices were routinely paid on the basis of the number of hours billed. Although we were advised that progress on work was monitored in informal ways, there was little evidence—or documentation to show—that payments had been related to the completion of project deliverables.

## RECENT ACTIONS TAKEN BY EHEALTH ONTARIO AND THE MINISTRY

Management at the eHealth Ontario agency has informed us that it has taken a number of actions since the completion of our fieldwork to improve operations. Among them are the following:

- New policies on procurement and delegation of authority have been approved.
- The procurement function has been strengthened—all areas must now develop plans identifying anticipated annual procurements, and quarterly procurement reports will be provided to the board.
- Fee-for-service consultants will be eliminated in all areas other than program development and implementation, with the number of consultants being reduced from more than 330 to less than 170 by the end of the current fiscal year.
- An eHealth Privacy Strategy with targets for the 2009/10 fiscal year has been developed.
- A network service cost-reduction strategy has been put in place, with savings of $1.2 million annually secured through negotiations with one of the agency's major network service providers.

The Ministry informed us that it also has recently introduced measures to improve its procurement controls:

- It has created a Financial Management Branch to oversee its workforce, including consultants, and to centralize all transfer payments.
- It recently restructured its Supply and Financial Services Branch to enhance oversight capacity for all procurement within the Ministry and to centralize its procurement process.
- An annual business plan that aligns with the eHealth Ontario Strategic Plan will be developed.
- It has initiated discussions to improve the government-wide accounting system to facilitate enhanced oversight of contract and payment processes.

These recent actions will help address many of the concerns that we have identified throughout our report.

## RECOMMENDATIONS

We took these recent actions into consideration in making our recommendations. Other provinces and many other countries around the world have recognized the benefits of EHRs—both from a health-care and a fiscal perspective. Accordingly, our recommendations, interspersed throughout the report, focus primarily on what we believe to be the most important steps that eHealth Ontario and the Ministry must take if they are to meet their goal of having a fully functional EHR for all Ontarians in place by 2015.

## OVERALL RESPONSE FROM THE MINISTRY AND EHEALTH ONTARIO

The Ministry of Health and Long-Term Care (Ministry) and eHealth Ontario welcome the report of the Auditor General and his recommendations on how to further improve the delivery of Ontario's Electronic Health Record (EHR).

oversight and broken rules go together like a horse and carriage.

## EXPENDITURE MANAGEMENT

At both agencies and the Ministry's eHealth Program Branch, we noted that policies and procedures for approving and monitoring payments to consultants were inadequate. For instance, consultant invoices were routinely paid on the basis of the number of hours billed. Although we were advised that progress on work was monitored in informal ways, there was little evidence—or documentation to show—that payments had been related to the completion of project deliverables.

## RECENT ACTIONS TAKEN BY EHEALTH ONTARIO AND THE MINISTRY

Management at the eHealth Ontario agency has informed us that it has taken a number of actions since the completion of our fieldwork to improve operations. Among them are the following:

- New policies on procurement and delegation of authority have been approved.
- The procurement function has been strengthened—all areas must now develop plans identifying anticipated annual procurements, and quarterly procurement reports will be provided to the board.
- Fee-for-service consultants will be eliminated in all areas other than program development and implementation, with the number of consultants being reduced from more than 330 to less than 170 by the end of the current fiscal year.
- An eHealth Privacy Strategy with targets for the 2009/10 fiscal year has been developed.
- A network service cost-reduction strategy has been put in place, with savings of $1.2 million annually secured through negotiations with one of the agency's major network service providers.

The Ministry informed us that it also has recently introduced measures to improve its procurement controls:

- It has created a Financial Management Branch to oversee its workforce, including consultants, and to centralize all transfer payments.
- It recently restructured its Supply and Financial Services Branch to enhance oversight capacity for all procurement within the Ministry and to centralize its procurement process.
- An annual business plan that aligns with the eHealth Ontario Strategic Plan will be developed.
- It has initiated discussions to improve the government-wide accounting system to facilitate enhanced oversight of contract and payment processes.

These recent actions will help address many of the concerns that we have identified throughout our report.

## RECOMMENDATIONS

We took these recent actions into consideration in making our recommendations. Other provinces and many other countries around the world have recognized the benefits of EHRs—both from a health-care and a fiscal perspective. Accordingly, our recommendations, interspersed throughout the report, focus primarily on what we believe to be the most important steps that eHealth Ontario and the Ministry must take if they are to meet their goal of having a fully functional EHR for all Ontarians in place by 2015.

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The Ontario government's eHealth agenda is broader than the EHR and focuses on dramatically improving patient care through the delivery of innovative health information systems. eHealth applications are vital tools that will support improved access to quality health care and health-care innovation and include public health surveillance systems, electronic medical records in physicians' offices, diagnostic medical imaging, and telemedicine services. Significant progress has been made in developing each of these systems.

The government continues to be committed to the eHealth agenda and eHealth Ontario's role in establishing EHRs for diabetes patients and, in future, for patients with other chronic diseases, leading to an EHR for all Ontarians.

The government is committed to ensuring that the money spent on eHealth is for initiatives that will strengthen and modernize Ontario's health-care system.

The Ministry and eHealth Ontario have introduced new policies and procedures to address each of the recommendations contained in the Auditor General's report.

The government issued a new Procurement Directive in July 2009 that requires a competitive procurement process be used for the acquisition of all consulting services and prohibits consultants from being paid for hospitality, food, and incidental expenses.

In September 2009, the government issued a new Travel and Expenses Directive that simplifies the rules for these expenses; mandates on-line training on expense claims for Ontario Public Service staff and employees in large agencies; and requires that the expenses of Ontario Public Service senior managers, cabinet ministers, political staff, and agency senior executives be posted on-line starting in April 2010.

## Detailed Audit Observations

Health-care experts say Electronic Health Record (EHR) systems have the potential to save lives, reduce health-care costs, and improve patient service. Some of the cited advantages of EHRs over traditional paper-based record systems are:

- improved legibility, availability, and retrievability of data;
- reduced likelihood of duplicate or unnecessary medical tests;
- shorter patient waiting lists;
- more effective physician diagnosis and treatment;
- reduced incidence of prescription errors, multiple prescriptions, and inappropriate drug combinations that can cause adverse drug reactions; and
- more efficient delivery of health services.

There are four essential components to an EHR system: the network, the applications, the data, and the terminals.

The following outline explains how these four components interact, using the analogy of highway transportation:

- *The network*—The network consists of the routes and connections via which EHRs are to be shared. A developer of an EHR system could build its own private network through which to channel EHRs or it could make use of pre-existing networks built by others. An example of the former is the SSHA-built network, a high-capacity government-controlled secure network that is perhaps best akin to an Ontario 400 series highway. The best example of the latter is the Internet, which is perhaps best akin to the vast series of smaller county and municipal roads that currently connect Ontarians. When it comes to EHRs, choosing the latter makes it much easier to connect all health-care providers and every Ontarian to the system. However, the Internet is

inherently less secure than the type of private network built by SSHA.

- *The applications*—The applications are the instruments through which EHR data are to be shared on the network. They are akin to the various transport vehicles that travel our highways daily, delivering the vast variety of goods Ontarians need. Different types of vehicles deliver different types of goods; likewise, different applications will allow the different parts of the EHR to be shared. The application that allows diagnostic images such as MRI scans to be shared will not be the same as the application that allows prescription medication data to be shared—just as a milk truck is different from a cement mixer. But they can both use the same highway.
- *The data*—The data consist of the information that people want to share and are akin to the goods that are delivered on our highways. Data could consist of, for example, a patient's lab test result, a list of medications he or she is on, or the patient's latest x-ray. All of these data have to be accurately and reliably compiled and available in updatable electronic databases so that the applications can share the data. Most of the EHR initiative's databases will be separate from each other, but when an individual's EHR appears on the computer screen, the applicable data from all the different databases will appear in one place, as illustrated in Figure 1.
- *The terminals*—The terminals are the destination points being connected via the network. In terms of our analogy, the terminals are where we want the goods—the data—to be delivered. Some of the key terminal points for EHRs are the hospitals, clinics, and physician's offices where Ontario's health-care providers do their professional work. One ultimate aim of the EHR initiative is to allow Ontarians access to their own personal health-care record—every Ontario home that has a computer through which residents access the Internet is envisioned as an eventual EHR terminal point.

## STRATEGIC PLANNING

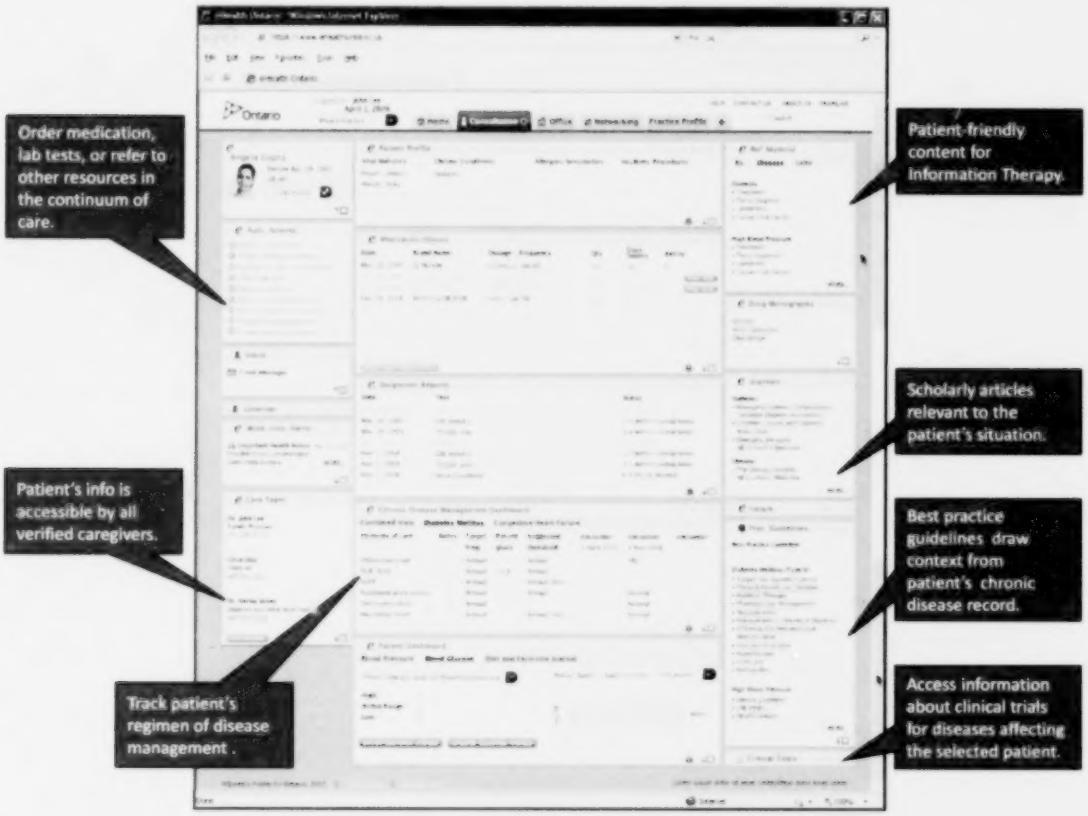
The first, and perhaps most critical, question to answer before undertaking any major IT investment is, "How will it address a clearly defined business need?" This is often spelled out in a business case supporting the decision to invest. In the case of EHRs, the need for the system appears well established—and this is reflected in the cross-Canada governmental support for it (see the Appendix for more details).

One of the most critical issues, and one that needs to be resolved early, is how centralized an IT system should be. A more centralized system, which often focuses more on developing the technology capable of serving the widest range of users, may well provide more consistent service and data access. The risk, however, is that technological and structural issues become more important than whether the applications are truly meeting user needs. A decentralized system makes more allowance for stand-alone applications customized to specific user needs. But there is also a risk that a decentralized system would engender information silos—subsystems and applications incapable of interacting, or being integrated, with related subsystems and applications; subsystems and applications may also be duplicated, and it may be difficult to identify the problems that need to be solved and the priorities that need to be set.

A key step in addressing user needs and developing the appropriate underlying IT infrastructure is a well-defined strategy. In arriving at this strategy, it is essential that the key stakeholders and users of the end product be actively involved up front. All too often, those proposing a new system, whether they be senior management or individuals from the technology side of the business, drive the investment agenda without adequate input from those who will actually be affected by, or use, the new system. Only once these needs are well

**Figure 1: Possible Layout of an Electronic Health Record**

Source of figure: the eHealth Ontario agency


Order medication, lab tests, or refer to other resources in the continuum of care.
Patient-friendly content for Information Therapy.
Scholarly articles relevant to the patient's situation.
Patient's info is accessible by all verified caregivers.
Best practice guidelines draw context from patient's chronic disease record.
Track patient's regimen of disease management .
Access information about clinical trials for diseases affecting the selected patient.

understood should work proceed. In the case of the EHR system, there would be little argument that the size, complexity, and diversity of the stakeholder and user community made it essential to carefully consider in detail the full range of their needs. A solid strategy also considers and addresses all relevant project risks. For instance, do those with the assigned responsibility for executing the strategy have the necessary depth of experience and project management capability?

A well-articulated strategy also needs to lay out a road map for how the various components are to be developed, the time frame for completion of each component of the system or phase of the work, and the estimated costs of each component or phase of the system. In the case of an EHR, integration of all the different components and privacy issues are also key pieces of the puzzle.

Once completed, the strategy becomes a valuable tool, not just for securing funding and getting the project off the ground, but also for evaluating progress against the benchmarks contained in it throughout the life of the project. This helps ensure that major problems, such as costs getting out of hand, project deadlines being missed, or products not matching up with users' needs, can be identified early and corrective action taken before the problems worsen.

The Ministry did not adequately addressed all these key elements of effective strategic planning when it launched its EHR initiative or even in the subsequent years. Although it did obtain approvals

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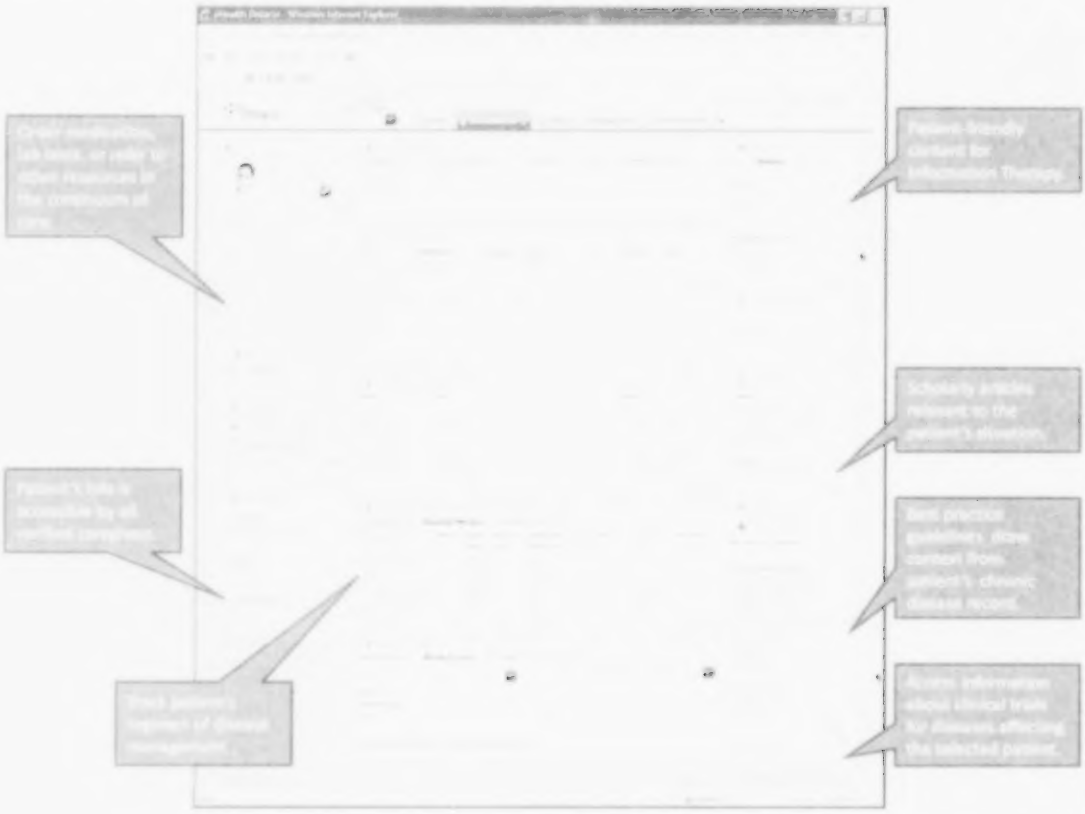

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The Ministry did not adequately addressed all these key elements of effective strategic planning when it launched its EHR initiative or even in the subsequent years. Although it did obtain approvals

for certain projects that were in support of eHealth and an eventual EHR, the Ministry acknowledged as late as 2008 that finalizing the eHealth Strategic Plan was a work in progress. The Ministry informed us that it was given the go-ahead to develop a comprehensive eHealth strategy only when the government announced in 2007 that it would commit to an EHR by 2015. And only in 2009 was it provided with the significant funding from the 2009 Ontario provincial budget to enable it to move ahead. The eHealth Strategic Plan was formally approved by the government in 2009.

## Consequences of Not Having a Strategic Plan—2002 to 2008

The Ministry had drafted various eHealth strategic documents from 2002 onwards, but it did not obtain government approval for any of them.

In fall 2006, Deloitte Consulting completed an operational review of SSHA commissioned by the Ministry and SSHA's board of directors because of growing concerns about SSHA's slow progress. Among the problems Deloitte identified was the absence of a comprehensive government eHealth strategy, which resulted in SSHA not being clear on its role and not being able to complete its own strategy. In 2007, we reviewed SSHA's efforts to address certain key Deloitte recommendations. We expressed concern that an overall government eHealth strategy had still not been approved and that no timelines had been established for the development of the EHR.

In July 2007, the Ministry developed a draft strategy that explored the possibility of developing the EHR by expanding an existing system for pediatric patients run by the Hospital for Sick Children. This system was called the electronic Child Health Network. The strategy called for delivery of the EHR in three waves:

- 2007–2010: By the end of this period, most Ontarians would have an EHR. Many patients would be going on-line to update their own data. Most clinicians would access patient information through the EHR.
- 2011–2012: By the end of this period, the EHR would be accessible throughout the primary care system. Chronic disease patients would be able to interact with their providers on-line. Ontarians would be referred between providers electronically.
- 2014–2016: By the end of this period, all Ontarians would be able to work with their care provider on-line. Ontarians would proactively manage appointments, tests, and prescription renewals, and medical information would follow the individual throughout the health-care information system.

This proposed strategy was never approved.

One serious consequence of the absence of an approved eHealth strategic plan was that, even though SSHA spent $800 million building and running a network (now run by the eHealth Ontario agency), this work was not well co-ordinated with ministry efforts. There were few clinical applications available to enable the sharing of EHR data and few databases available to feed these applications. Returning to the earlier analogy, there were few vehicles on the highway, and even those that existed were carrying few if any of the goods that the highway was built to carry. Although some of the broader EHR applications were begun earlier, many of the critical projects were not begun until 2008. The Ministry is responsible for this significant lag—until the formation of the eHealth Ontario agency, the Ministry was responsible for the eHealth strategy and ensuring that applications and data of value to health-care providers were developed. An effective strategy would have planned for a more co-ordinated delivery of the network and the applications and data content, so that stakeholders would see the network's value and want to be on it. In reality, however, the network today sits for the most part underutilized, with significant excess capacity, while time and technological progress erode its value and necessitate continual reinvestments to keep it available for

when the vehicles and goods are eventually ready to travel on it.

A second consequence of the absence of a strategic plan is that work on the EHR initiative proceeded without adequate planning for a means for all Ontario citizens to access the network. SSHA built a private network that is currently usable only by the health-care community. In the same way that it is inconceivable that every Ontarian's driveway could be directly connected to an onramp of a 400 series highway, the network itself can never grow large and intricate enough to provide the connections that will enable all Ontarians to directly connect to it. Rather, other networks, and the Internet generally, will need to be used and connected to the network SSHA built. Since the Internet is for the most part an unregulated, open, and unsecure environment, appropriate technical safeguards need to be in place to protect the confidential data travelling through it. Interception of the data will be a constant concern, so providing these connections while at the same time protecting patient security and the privacy of extremely personal and confidential data is a key obstacle to overcome in completing the EHR.

## The 2009 Strategic Plan

In 2008, the Ministry engaged the services of a health-care consulting firm to help develop an eHealth strategy that would be acceptable to the government. This resulted in an August 2008 ministry eHealth strategy submission to the government that sought approval for, among other things, "the establishment of an electronic health record of clinical information for every patient, and that could be controlled by the patient, by 2015." The submission was approved and, once the eHealth Ontario agency was formed in fall 2008, an eHealth strategy document consistent with this submission was completed, publicly released for comment in January 2009, and published in final form in March 2009.

The Strategic Plan calls for the electronic health initiative to be implemented in phases, with three shorter-term deliverables identified as its top priorities:

- *The Diabetes Registry*—The government estimates that diabetes afflicts approximately 900,000 Ontarians, has increased by 69% over the last 10 years, and accounts for 3,200 deaths annually. One of the Strategic Plan's major initiatives is the creation of a Diabetes Registry. The Registry is to compile diabetes patient and health-care-provider data, enable electronic monitoring of adherence to best diabetes-management practices, and provide alerts to providers when best practices are not being followed.
- *The ePrescribing and Drug Information System*—The Ministry reports that the fourth-largest cause of death in Ontario is preventable adverse drug reactions and that having an incomplete medication list is the primary source of medical error. The Strategic Plan calls for a system that allows doctors to prescribe medications electronically, generates patient medication profiles, checks for allergy and drug-to-drug interactions, eliminates errors resulting from legibility problems, reduces dosing errors, and improves the management of complex therapies. It is also intended to provide patients and their families with their medication history and the ability to record and track personal medical data such as their blood-sugar readings.
- *The Wait Times Initiative*—Unlike the other two priorities, this initiative does not directly relate to the EHR. As the name suggests, it is aimed at reducing wait times for key health services and making wait times available to the public on a government website designed to track access to those health services.

One aspect of the Strategic Plan that we particularly welcomed was the robust and detailed description of activities to be conducted from 2009

through 2012. To its credit, the Plan sets out a number of concrete targets and deliverables on each of the key EHR components. It thus represents a major step forward in crystallizing the government's eHealth priorities and plans, and communicating these to stakeholders.

That said, there are areas where we believe more strategic attention is required. The Strategic Plan envisions its three priorities as "quick-win" projects with immediate clinical value. Although we certainly understand the desire to complete shorter-term "quick wins" to gain health-care-provider support for the EHR agenda, we are concerned that this new focus means the goal of delivering an EHR by 2015 is being, in the Ministry's words, "de-emphasized." In other words, there is a risk that these three priorities are being emphasized at the expense of addressing how the eHealth Ontario agency will deliver a fully functional EHR for all Ontarians by 2015.

Another area of concern related to the Strategic Plan providing details on the work planned through to 2012 only. By the end of 2012, there will still be considerable work to do to achieve a fully functioning EHR, even if every piece of work planned for in the Strategic Plan is completed on time and with its intended functionality fully achieved. The Strategic Plan does not indicate how close the government will be in 2012 to the actual deployment of the EHR; nor does it specify what the major remaining pieces of the puzzle will be at that point in time, how much work they will require, and what the government plans or will need to do to complete this work over the following three years.

We specifically raised this issue when we met with the consulting firm engaged to help draft the Strategic Plan. In response, the firm provided us with a May 2009 document it had prepared to outline the gaps it expected would remain in 2012 once work under the Strategic Plan is completed. This document outlined the activities expected to be incorporated into the next eHealth Strategic Plan covering the period from 2012 through 2015 to close these gaps. However, this document has not been released to stakeholders or the public and does not have any official or approved status with the government.

## RECOMMENDATION 1

The eHealth Ontario agency should develop a comprehensive strategic plan that specifically addresses the Electronic Health Record (EHR) target, takes Ontario beyond 2012, and lays out the path for the implementation of the EHR by 2015. The plan should also address the challenge of ensuring that the disparate EHR applications are appropriately integrated and that suitable privacy controls are built into the development process.

## MINISTRY RESPONSE

In 2007, the government announced that it would develop an Electronic Health Record for all Ontarians by 2015. The 2009 Ontario Budget also provided approximately $2 billion over the next three years to allow the province to move ahead in a co-ordinated and meaningful way.

Ontario's plan towards an EHR has three components: building a technology infrastructure; developing clinical applications; and creating the EHR itself and its supporting technology.

Ontario has directed its efforts toward all three areas. As have other jurisdictions, Ontario has decided to use a specific clinical priority —diabetes—as a focus point in the creation of an EHR. Achieving EHRs for diabetes patients will provide a foundation for achieving EHRs for patients with other chronic diseases. From there, EHRs can be extended to all Ontarians.

The Ministry recognizes that more work is required to meet the government's commitment to an EHR for all Ontarians by 2015, and will continue to work with eHealth Ontario to meet this commitment.

## EHEALTH ONTARIO RESPONSE

Over the last number of months, eHealth Ontario has completed its detailed business plan, which relates Ontario's eHealth Strategy 2009–2012 to the daily activities of the organization that are under way in support of system development and operations. Foundational priorities in the Strategic Plan that are essential to the Electronic Health Record are integral to this plan.

With this important piece of work completed, the organization, under the leadership of the board of directors, will now commence a process to develop a plan that takes the organization beyond 2012. This plan will lay out a road map that specifies deliverables, risks, timelines, privacy measures, and how the various applications will be integrated.

This planning process will have to be a collaborative one between eHealth Ontario and the Ministry of Health and Long-Term Care. It will also require the active engagement of key stakeholders across the province.

## OVERSIGHT

### Ministry and SSHA Roles and Responsibilities

Most of the public criticism for the lack of progress on the EHR initiative has been directed at SSHA. In our view, this is not entirely fair. We clarify here the roles and responsibilities of the Ministry and SSHA with respect to the EHR agenda.

SSHA was established in 2002 as a provincial agency by regulation under the *Development Corporations Act*. Its initial mandate was to support specific ministry programs, but the regulation was amended in 2005, and SSHA's mandate was clarified as being to:

- provide and operate secure infrastructure to enable secure transfer of personal health information among sector providers; and
- host personal-health-information applications, including core provincial systems that are the source of information for the EHR.

In September 2007, the Ministry and SSHA signed an Affirmation of their Memorandum of Understanding that reinforced their mutual understanding of their respective roles and responsibilities. It indicated that SSHA's mandate was to provide "the secure, integrated, province-wide information technology infrastructure to allow electronic communication among Ontario's health service providers." The components of this infrastructure were:

- a managed private network;
- security infrastructure;
- physical facilities;
- secure messaging service and on-line directories;
- data and technology standards; and
- a Voluntary Emergency Health Record (to provide health-care providers with critical personal health information in times of emergency).

SSHA's Accountability Agreement with the Ministry for the 2007/08 to the 2010/11 fiscal years contained the Ministry's performance expectations for SSHA for just the 2007/08 fiscal year. These expectations also made it clear that the Ministry saw SSHA as an IT infrastructure provider and not a strategic partner in delivering the full eHealth agenda. Except for some deliverables relating to recommendations arising from two external reviews (one by Deloitte Consulting in 2006 and the other by the Information and Privacy Commissioner in 2007), the deliverables were technical in nature and reflected existing plans to expand the network.

The Ministry's eHealth Program Branch monitored SSHA's operations and approved its budgets. The Ministry was also responsible for developing the overall eHealth strategy and setting SSHA's

through 2012. To its credit, the Plan sets out a number of concrete targets and deliverables on each of the key EHR components. It thus represents a major step forward in crystallizing the government's eHealth priorities and plans, and communicating these to stakeholders.

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The Ministry's eHealth Program Branch monitored SSHA's operations and approved its budgets. The Ministry was also responsible for developing the overall eHealth strategy and setting SSHA's

direction and business priorities. Of particular significance were its responsibilities for co-ordinating the development of the applications and databases that would enable health-care practitioners to share health-care data on SSHA's information highway. The lack of an approved strategic plan until 2009 undoubtedly contributed to the Ministry's inability to effectively deliver on these responsibilities.

It has been said that shared accountability means no accountability; the relationship between the Ministry and SSHA may be a textbook example of this. By all accounts, it was not a true partnership and was marred by a lack of collegiality and confusion over each party's respective roles and responsibilities. The Ministry and SSHA blamed each other for many of the failures and delays in system implementation.

A telling example of how the Ministry was not working hand in hand with SSHA involves key SSHA employees leaving SSHA to work for the Ministry. Former SSHA executives advised us that they often faced operational problems as a result of employees moving to the Ministry to take consulting contract positions at significantly higher compensation levels. SSHA's board minutes support this complaint; in one of his reports to the board, the SSHA Chair noted:

> The [Ministry's eHealth Program Branch] has 10 [to] 11 people that came from SSHA. Some were forced out of SSHA because of contract versus employment issues, but others left because they were aware of lucrative contracts at the [Ministry's eHealth Program Branch]. Several others were recruited by the [Ministry's eHealth Program Branch]. In some cases, staff that were employees at SSHA became contractors at [the Ministry's eHealth Program Branch].

## Ministry Oversight of SSHA

From its inception, SSHA grew rapidly, with its spending on EHR initiatives increasing from $13.6 million in its first year of operations (2002/03) to $213 million in the 2008/09 fiscal year. In total over this period, SSHA spent more than $800 million, primarily on building a secure data-transmission network, connecting many of the estimated 24,000 publicly funded health-care sites in Ontario to this network, and working to provide the estimated 150,000 people working in the health-care system with email accounts on this network.

We assessed the oversight of SSHA operations and spending by the Ministry's eHealth Program Branch and saw little evidence that this monitoring responsibility had been adequately fulfilled.

SSHA was required to provide monthly financial reports and quarterly performance reports to the Ministry's eHealth Program Branch, and we asked to review these. The Ministry's eHealth Program Branch could locate only the February 2009 monthly financial report. The reports for all other months from 2003/04 through 2008/09 could not be located. Ten of the 23 quarterly performance reports for the same six-year period could also not be located.

With the formation of the eHealth Ontario agency, the Ministry began rebuilding its oversight unit, and the organizational structure of this unit has yet to be finalized.

## eHealth Ontario Agency Governance

To a large extent, the sole-sourcing of a number of significant consultant contracts at the eHealth Ontario agency is an indication of financial governance problems at the agency. The agency's first CEO wielded considerable power to make unilateral decisions and essentially ignored procurement policies. There are a few possible reasons for this:

- The board did not adequately oversee the CEO's actions and decisions in this area. It

appears to have accepted the CEO's assertion that government and agency procurement policies were being followed, without getting sufficient details as to what that meant. For example, it never asked whether any contracts were sole-sourced and, if so, why, and what the value of such contracts was.

- At the same time that a great deal of power was concentrated in the CEO's hands, the agency was faced with the challenge of accelerating progress on the EHR initiative, considered by many to have suffered when it was managed by SSHA and the Ministry's eHealth Program Branch. It was during this period, from October 2008 to June 2009, that millions were paid to consultants who had not been competitively procured. In other words, it was during this time of transition that the CEO and her executive management overrode the normal procurement and contract management controls that SSHA's procurement department had in place. Our discussions with the CEO indicated that urgency and the implied authority she thought she had been given justified and warranted this.
- The Chair told us that the Premier had personally asked him to chair the eHealth Ontario agency. He further informed us that he had told the Premier that his acceptance of the position was largely conditional on his being able to choose the CEO and the agency having the autonomy to act without significant government interference. We were advised that the Premier met with the Chair's choice for the new CEO to impress upon her the importance of her upcoming work. Given that it had no input into the appointment of the CEO, and understanding that the Chair had personally chosen the CEO with the support of the Premier, the board may have had a perception that its oversight role with respect to the CEO was more limited than it would be in normal circumstances.

The board's approval of a performance bonus for the CEO midway through her first year on the job is an example of the extent to which the board may have felt it had little power to oversee matters relating to the CEO or question how she should be treated. There are two issues with respect to this bonus—the amount paid and the fact that it was awarded after only four months on the job.

The amount of the bonus paid to the CEO was $114,000, which was 30% of her salary. The maximum bonus rate under eHealth Ontario policy was 15%. However, the CEO had negotiated her 30% maximum bonus as one of the conditions of accepting the job, and it was included as part of her employment contract, approved by the Minister and authorized by an Order-in-Council. Although the bonus was significantly higher than what government Deputy Ministers can receive, we recognize that the government has to have some latitude with respect to executive compensation. The board therefore had no say with respect to the bonus available. It did have a responsibility, however, to assess whether the CEO's performance justified the full 30% and whether the full bonus was warranted only four months into the job.

We noted that the board approved payment of the $114,000 annual bonus on March 4, 2009. We were advised that the Chair of the Board recommended that the CEO be paid the full amount of the annual bonus because, in addition to having performed in an exemplary manner, she had foregone the bonus she could have earned as of March 31, 2009, if she had continued to be employed by her former employer, Cancer Care Ontario (CCO). However, the maximum allowable bonus at CCO was 15%, and in the previous year at CCO she had received a much smaller bonus of $38,000.

Although we were advised that the board did discuss the CEO's bonus, we saw nothing in the board minutes to indicate that the board formally questioned whether awarding the CEO the full amount of the annual bonus after only four months was appropriate.

## RECOMMENDATION 2

To ensure that governance arrangements for the eHealth Ontario agency allow the government and the agency's board of directors to exercise informed oversight while allowing management the day-to-day operational autonomy needed to fulfill the agency's mandate, the following three accountability mechanisms should be implemented:

- The eHealth Ontario agency's board of directors should clearly specify the performance, operational, and financial information they need to obtain regularly from agency senior management to enable them to meet their oversight responsibilities.
- Specific targeted goals or benchmarks for the agency, including timelines and estimated costs, should be established and regularly reviewed to enhance the oversight of agency operations by the agency's board and the Minister of Health and Long-Term Care.
- Progress towards these targeted goals—along with details of major issues, risks, and explanations for variances—should be succinctly communicated in writing to, and discussed in periodic briefings with, the agency's board and the Minister of Health and Long-Term Care.

## MINISTRY RESPONSE

The Ministry of Health and Long-Term Care and the Smart Systems for Health Agency have had an accountability relationship since 2003. In April 2009, the Ministry and eHealth Ontario signed a Memorandum of Understanding and a Transfer Payment Accountability Agreement. These documents provide clear accountability and reporting frameworks.

The Ministry has recently formed an eHealth Liaison Branch within the Ministry to formally oversee eHealth Ontario. The Ministry and eHealth Ontario are eager to work together to ensure that proper procurement policies and procedures are in place and that regular compliance monitoring is undertaken.

## EHEALTH ONTARIO RESPONSE

Building on the annual business plan, the board approved a Balanced Scorecard Framework to ensure that management will provide quarterly status reports on the progress of initiatives to the board. These reports will include performance against specific targeted goals, financial targets, project timelines, and outcome measures. The scorecard has been developed not only as a mechanism for the board to provide stewardship and oversight, but also as a communications tool to government and the public.

At the September board meeting, the board also approved a policy on risk management that clarifies its oversight responsibility for risk management.

## PROGRESS ON EHR PROJECTS

In this section, we discuss the application and data projects (for example, registries, information systems, and portals) that make up the EHR initiative, their status, and project-management issues that will need to be proactively managed if Ontario is to meet its commitment of completing the EHR initiative by 2015.

Canada Health Infoway tries to ensure that the separate EHRs being developed in each jurisdiction are compatible across Canada. It also issues technical standards, guidelines, and toolkits, and funds up to 75% of the cost of provinces' and territories' approved projects. The Infoway has been monitoring the progress of Canadian provinces and territories in implementing EHRs, focusing its assessment on the following six key components:

- *A Client Registry*—Each jurisdiction is attempting to develop a single patient directory that will contain, for each member of

the population, a unique health identification number, along with current and historic demographic information such as the individual's name, address, and birth date. It is critical to the success of the EHR initiative that the information in this registry be complete, accurate, and updatable, and, further, that the registry be designed to ensure that each individual's information remains strictly confidential.

- *A Provider Registry*—Each jurisdiction is attempting to develop a single health-care-provider directory that will contain a full list of health-care professionals (including physicians, dentists, pharmacists, nurses, and others) authorized to access the EHR system.
- *A Diagnostic Imaging System*—Each jurisdiction is attempting to develop an information system that will collect and store all diagnostic images such as Magnetic Resonance Imaging (MRI), Computed Tomography (CT), X-ray, and ultrasound test results entirely in digital format, without the need for film. The system is meant to allow practitioners to manage, distribute, and view these images regardless of where they are located or where they were obtained.
- *A Drug Information System*—Each jurisdiction is attempting to develop an information system that will allow health-care providers to access, manage, and share their patients' medication history, including prescribed and dispensed drugs, allergies, and ongoing drug treatments. It is hoped that the system will enable drug-interaction checks to be performed automatically to assist physicians and pharmacists with their prescribing and dispensing decisions and to help reduce the number of adverse drug interactions.
- *A Laboratory Information System*—Each jurisdiction is attempting to develop an information system that will allow authorized practitioners to order laboratory tests for their patients and to view the results of these tests electronically from their offices regardless of where the test was conducted.
- *Clinical Reports or Immunization*—Additional client and practitioner information systems, for example, an application to deal with immunizations, fall into this sixth category.

In its 2007/08 corporate business plan, the Infoway ranked Ontario ahead of the territories and the provinces of Nova Scotia, Quebec, and New Brunswick, but behind all six remaining provinces. It further projected that Ontario will have slipped behind the provinces of New Brunswick and Quebec by March 31, 2008, and thus only be ahead of the Northwest Territories, the Yukon, and Nunavut. Figure 2 shows the Infoway's latest assessments of jurisdictional progress as of March 31, 2009. The Ministry indicated that the Infoway's approach to measuring EHR progress might not necessarily reflect all the work required to develop an EHR, especially in a large province like Ontario. However, we believe the Infoway's assessment provides a useful benchmark. As well, although Figure 2 indicates that Ontario's Client Registry and Diagnostic Imaging System are both 95%–100% complete, our work indicated that these systems are likely not that far along in their development. We discuss this in more detail later in this section.

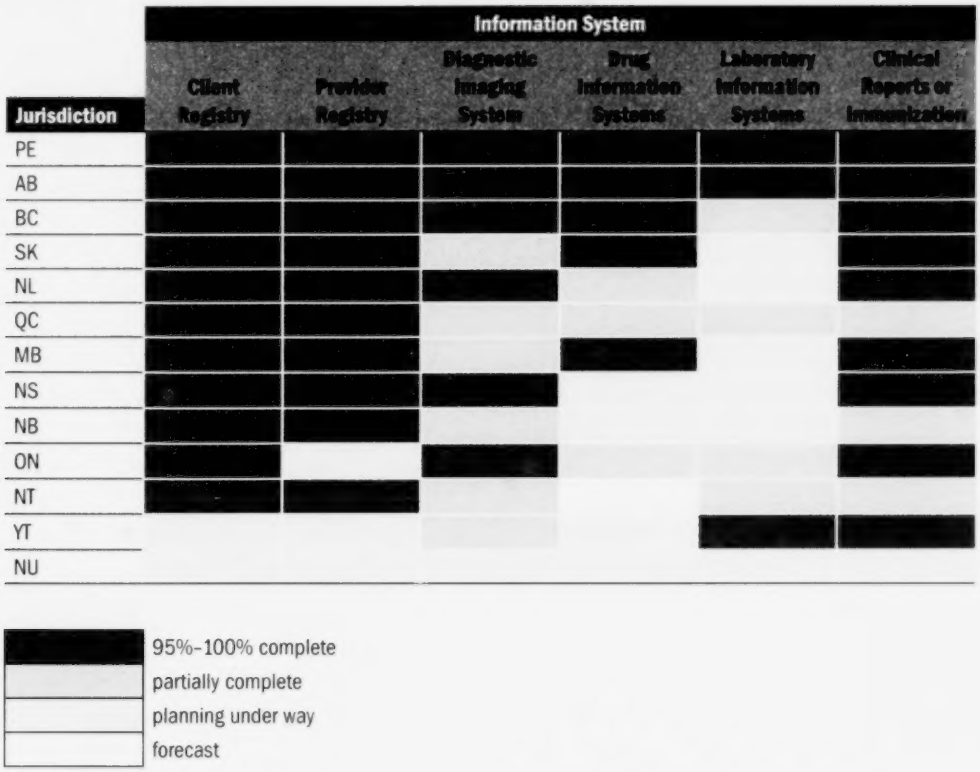
One factor contributing to Ontario's slippage has been that the data and application projects were delayed from October 2008 through June 2009, while the eHealth Ontario agency was getting established. A number of EHR projects were put on hold awaiting clarification of their scope and direction, and revised project charters for all EHR projects were not completed until July 2009. This has contributed to the pushing back of a number of expected completion dates for various projects.

Although Ontario's EHR projects partially align with those identified by the Infoway, the Ministry is working on a number of other applications and registries, several of which are essential to the eventual realization of an EHR. These include:

- *Electronic Medical Record Systems*—Worldwide, primary-care physicians are automating

**Figure 2: Jurisdictional Progress on Six Key EHR Deliverables as of March 31, 2009**

Source of data: Canada Health Infoway




their patient records (including demographics, medical and drug history, and other information such as laboratory results and findings from diagnostic imaging). Systems for automating patient records are called "Electronic Medical Record" (EMR) systems. It is recognized that information from these systems will be the primary source for some of the significant data to be captured in the eventual patient EHR.

- *A Consent Directive and Privacy Audit Application*—This will include a registry of patient-consent data and an access log to maintain information on who has accessed data from a patient's EHR. This will be a particularly important system for protecting patient privacy and confidentiality, because it will give individuals some control over their personal health information and allow them to monitor who is accessing it.
- *A Diabetes Registry*—This registry is meant to compile diabetes patient and provider data, enable electronic monitoring of adherence to best diabetes-management practices, and provide alerts to physicians when best practices are not being followed.
- *An application that integrates all other applications and links them to a portal*—This will integrate the key applications that have been created so that they can communicate and share patient-record information with each other "behind the scenes." Once integrated, they must be linked to a central portal or "viewer" to enable authorized health-care providers to view patient data residing in a number of different databases on one screen.

as illustrated in Figure 1. This will also enable health-care providers to update patient information on-line through a single interface. This end product will in essence be a "one-window" view of all the key clinical and personal health information for a patient.

- *An implementation and adoption project*—This project is meant to support the successful implementation and adoption of all the applications and information systems across Ontario's 14 Local Health Integration Networks (LHINs) and related communities.

Figure 3 summarizes total EHR expenditures to March 31, 2009—where possible, we have indicated amounts allocated to the various EHR component projects.

## Project-management Concerns

We found few of the information-system and registry projects to be progressing well from the standpoint of completing their various phases on time and, as yet, delivering the required functionality to meet user needs. Projects were also typically started before all of the resources required to complete them had been identified and procured. For example, a complete analysis of staff and consultant hours and other input costs, such as the hardware or software acquisitions needed to complete the project, were often not determined. Once projects had started, project expenditures and deliverables were not being adequately tracked to give management assurance that the deliverables were being attained as the related costs were being incurred. We also found that the whole issue of integrating all these systems and addressing the privacy issues for each will require significantly more attention.

The following sections outline our observations on the most significant EHR projects under way.

### The EHR Network and Related Products and Services

The network and the two data centres that were to underpin the EHR were developed by SSHA and

**Figure 3: Expenditures[1] on EHR Projects and Initiatives ($ million), 2002/03–2008/09**

Source of data: Ministry of Health and Long-Term Care

| Project/Initiative | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | Total |
|---|---|---|---|---|---|---|---|---|
| SSHA[2] | 12 | 85 | 87 | 111 | 125 | 173 | 224 | 817 |
| Ministry's eHealth Program Branch | – | – | 3 | 4 | 5 | 9 | 5 | 26 |
| Diagnostic Imaging System | – | – | 10 | 10 | 1 | 23 | 25 | 69 |
| Drug Information Systems | – | – | 3 | 7 | 3 | – | 5 | 18 |
| Laboratory Information Systems | – | – | 8 | 21 | 28 | 32 | 7 | 96 |
| electronic Child Health Network[3] | – | – | – | – | – | 9 | 9 | 18 |
| Identity Access and Privacy | – | – | – | – | – | – | 19 | 19 |
| Diabetes Registry | – | – | – | – | – | – | 5 | 5 |
| integrating all systems and linking to a portal | – | – | – | – | – | – | 10 | 10 |
| implementation and adoption | – | – | – | – | – | – | 11 | 11 |
| **Total** | **12** | **85** | **111** | **153** | **162** | **246** | **320** | **1,089** |

1. These expenditures include overhead, salary, and administrative spending in addition to spending on EHR projects.
2. SSHA expenditures include spending on the network.
3. The electronic Child Health Network is an EHR system for children under 19 years of age that the Ministry had planned to expand in 2007 but for which future plans are now unclear under the new 2009 eHealth Strategic Plan.

Figure 2: Jurisdictional Progress on Six Key EHR Deliverables as of March 31, 2009

Source of data: Canada Health Infoway

| Jurisdiction | Information System | | | | | |
|---|---|---|---|---|---|---|
| | Client Registry | Provider Registry | Diagnostic Imaging System | Drug Information Systems | Laboratory Information Systems | Clinical Reports or Immunization |
| PE | | | | | | |
| AB | | | | | | |
| BC | | | | | | |
| SK | | | | | | |
| NL | | | | | | |
| QC | | | | | | |
| MB | | | | | | |
| NS | | | | | | |
| NB | | | | | | |
| ON | | | | | | |
| NT | | | | | | |
| YT | | | | | | |
| NU | | | | | | |

95 to 100% complete
partially complete
planning under way
forecast

their patient records (including demographics, medical and drug history, and other information such as laboratory results and findings from diagnostic imaging). Systems for automating patient records are called "Electronic Medical Record" (EMR) systems. It is recognized that information from these systems will be the primary source for some of the significant data to be captured in the eventual patient EHR.

- *A Consent Directive and Privacy Audit Application*—This will include a registry of patient consent data and an access log to maintain information on who has accessed data from a patient's EHR. This will be a particularly important system for protecting patient privacy and confidentiality, because it will give individuals some control over their personal health information and allow them to monitor who is accessing it.
- *A Diabetes Registry*—This registry is meant to compile diabetes patient and provider data, enable electronic monitoring of adherence to best diabetes-management practices, and provide alerts to physicians when best practices are not being followed.
- *An application that integrates all other applications and links them to a portal*—This will integrate the key applications that have been created so that they can communicate and share patient-record information with each other "behind the scenes." Once integrated, they must be linked to a central portal or "viewer" to enable authorized health-care providers to view patient data residing in a number of different databases on one screen.

are now the responsibility of the eHealth Ontario agency. As of December 2008, the data centres housed an estimated 1,300 servers, and the network connected some 3,500 clients. Clients include all Ontario's public hospitals, public health units, community care access centres, and retail chain pharmacies; many of the province's continuing-care organizations; and some physician offices. Network services were outsourced to two vendors that are providing the circuits connecting the medical community to the network. SSHA did not adequately manage these vendors—for example, penalties for poor performance were not built into one of the service-level agreements, which impaired the government's ability to ensure that appropriate performance standards were met.

Throughout the first half of 2008, problems with the data centres resulted in services often being unavailable to clients. The problem was particularly acute in May, with service outages occurring intermittently over a period of two weeks. In an August 19, 2008, report to the board, SSHA's Chair noted that there had been five significant service interruptions since January. Upon investigation, it was determined that most of the incidents were caused by issues with the data centres rather than with the broader network. We were advised that the problem was fixed, and service disruptions were significantly reduced by the second half of 2008. However, a consulting firm hired to review three of the most significant service interruptions and make recommendations to restore stability concluded that the network continued to be at high risk of incurring significant business outages because of:

- a lack of standards and operational processes;
- conflicting priorities (focus on expanding the network at the expense of operational performance);
- immature capacity and performance capability;
- the absence of an infrastructure lifecycle-management process;
- a lack of meaningful metrics to monitor system performance;
- an aging network core approaching the end of its useful life (the core was built in 2002).

The 2009 eHealth Strategic Plan acknowledges that "major portions of the infrastructure are out of date and prone to failure" and notes that the arrangements with the two outsourced firms operating the network are not being adequately managed.

An SSHA product developed for the network is its email service, called "ONE Mail," built at an estimated cost of $16 million. At the time of the eHealth Ontario agency takeover, ONE Mail had 225 organizational clients and 120,000 individual clients, and it was targeting annual expenditures of $4.4 million for additional deployments. It is interesting to note that, as early as 2006, only approximately one-third of ONE Mail accounts were estimated to be in active use, and 53% of clients responding to a survey said they were not satisfied with it. When the eHealth Ontario agency was formed, it assessed ONE Mail as being inferior to commercially available email offerings and assessed ONE Mail's dependency on the SSHA network as a fatal flaw—whenever there was a network outage, all email accounts were impacted. ONE Mail deployments were also significantly behind schedule.

We found the network to be both expensive to operate and significantly underutilized, with no effective cost containment strategy in place. Of the $72 million in operating costs incurred annually to maintain the network, $30 million (or $2.5 million per month) was being incurred to provide communication lines that carry little or no traffic. We analyzed traffic on the entire network, covering the circuits provided by both vendors, and observed the following:

- For the most part, the network is simply not being used. On average throughout the network, clients are using only 0.5% of the available bandwidth, and the average peak usage is only approximately 16 % of the available bandwidth.

- Even though vendors were supposed to monitor network traffic, they were not identifying individual circuits that were inactive or underutilized. Monitoring was limited to identifying only the busiest circuits to assess whether they should be upgraded. Of 4,178 circuits, we estimated that only 116 may require such upgrades because peak usage was exceeding 70% of the available bandwidth. The current monthly costs associated with these particular highly utilized circuits is only $90,400, or less than 2% of the network's monthly cost.
- The network's administrators have an "uplift process" to increase bandwidth to clients when required. In our view, there is therefore no reason to provide excessive bandwidth in advance of need. We found, however, that out of the 4,178 circuits deployed, 1,386 circuits are totally inactive, almost inactive, or significantly underutilized. The eHealth Ontario agency is paying more than $2.5 million per month to maintain these circuits—more than half the total monthly cost of operating the network. Specifically:
  - 198 circuits had absolutely no traffic.
  - 782 circuits were almost inactive, with an average peak utilization of less than 1% of the available bandwidth. The traffic we did note on these circuits was so sparse it may well have been generated by the network's own monitoring software.
  - 406 circuits were significantly underutilized, with an average peak utilization of less than 10% of the available bandwidth.
- We further found that the devices that compiled and provided data to the network's monitoring and reporting software had been configured incorrectly and were not producing accurate data. Specifically, the system was overstating the usage of 405 of its circuits. Without accurate usage data, management cannot appropriately address utilization issues.

We also noted that, in 2001, consistent with federal-government and industry standards for security, SSHA acquired 150,000 Public Key Infrastructure (PKI) certificates (tools for ensuring that users can securely communicate with each other and be sure of the identity of the party they are interacting with), planning to provide them to all end users. However, this approach to secure communications was abandoned after the purchase, with only an estimated 2,500–3,000 PKI certificates being issued. Despite this, the agency continues to pay an annual licence fee to maintain these certificates. Some $2.4 million in such fees had been paid at the time of our audit.

### The Client Registry

As mentioned, a complete and accurate Client Registry is considered an essential precondition to the creation of EHRs. The cost of developing the Client Registry is estimated at $44.8 million.

Both SSHA and the Ministry have struggled with an appropriate approach to developing the Registry. When we first reviewed SSHA's operations, the idea of building the registry using Ontario Health Insurance Plan (OHIP) records as a base had been rejected because of the incompleteness of these records and because the data were considered to be of questionable reliability. However, developing the registry via an independent process proved too challenging, and the current plan calls for building the Client Registry from OHIP's Registered Person Database, which includes all Ontarians currently covered by OHIP. The first release of the Client Registry was planned for June 2009, but this has been delayed partly because of difficulties in reaching a data-sharing arrangement with OHIP agreeable to both the Ministry and the agency. The data quality of the Registered Person Database also remains an issue, and the identification of the approximately 4% of Ontarians who are not covered by OHIP has yet to be resolved.

Some milestones originally scheduled for completion in 2009/10 have been pushed back

one year, and the detailed timelines for deliverables have been revised. Only one Client Registry deliverable is now slated for 2010/11 and none for 2011/12. These setbacks are of concern because a fully functional and secure Client Registry is an essential building block in the development of a province-wide EHR system.

### The Diagnostic Imaging System

This project essentially started when the Ministry began supporting regional initiatives aimed at migrating from film and paper formats for diagnostic images (such as x-rays, ultrasound images, and CT and MRI scans) and their associated reports to a digitized format and storing them in regional repositories. The project now aims at making the digital images and reports available to health-care providers at the point of patient care. Ultimately, the regional repositories are to be expanded and integrated into the provincial EHR. At the time of our audit, there were four regional repositories in place that allowed for the storage, retrieval, distribution, and presentation of diagnostic images. A key project target is that 100% of diagnostic images taken by hospitals will be digitally stored and shareable among health-care providers by fall 2011.

The first half of this key target has been met, and efforts at enabling image-sharing are ongoing. Total project costs are projected to be $280 million, $107 million of which it is hoped will be provided by Canada Health Infoway. The initial targeted completion date for the system of March 2009 has been pushed back several times. For example, when we began our audit, the expected completion date had been set back 18 months to September 2010, when it was decided to consolidate the original plan for six repositories and instead develop four repositories to realize project savings estimated at $14 million. We also noted at the time of our audit that project plans did not include having some 700 independent health facilities linked to the repositories—even though 40% of the province's diagnostic images are currently maintained by these facilities.

### The Drug Information System

The Drug Information System is the second of three priorities in the eHealth Ontario agency's 2009 Strategic Plan. eHealth Ontario expects that, if it is delivered as planned, a medication-management system has the potential to save an estimated $350 million annually in health-care costs.

The Strategic Plan describes four activities being undertaken as part of this project:

- a demonstration of electronic prescribing;
- expansion of an existing drug-profile viewer;
- a computerized medication-ordering system for oncology clinicians; and
- the procurement of a drug-information system to provide clinicians with a medication profile of all Ontario residents and their pending prescriptions and to provide patients with their medication history and the ability to record and track certain medical data such as blood-sugar readings.

The project is planned to be completed over four years, at a total cost of $150.3 million. The first activity, the demonstration of electronic prescribing, has been completed. Next, the existing drug-profile viewer is to be expanded from its current availability in hospital emergency departments. Then, patient medication profiles are to be developed by capturing dispensing events from community pharmacies. Physicians are then to be connected to the system and, finally, other health-care providers are to be connected.

We also noted some slippage on this project. Installation and testing targets scheduled for April 2009 had not been met, and work on the capture of dispensing events, slated to begin in April 2010, has been delayed. Infrastructure Ontario will be responsible for procuring the drug-information system, which is to contain a full medication profile of Ontarians. The eHealth Ontario agency expects this procurement to take place in October 2010.

### The Laboratory Information System

This project is aimed at the development of a centralized repository of laboratory test results that will allow authorized practitioners from across the province to both order and view laboratory test results electronically. This project actually began in the late 1990s, and it now collects and stores a large and growing proportion of test results from hospitals and commercial labs.

If completed as planned, clinicians will be able to view on-line laboratory results and reports from all hospital, community, and public health laboratories regardless of where the test was conducted. The results are to be linked to, and form part of, patients' EHRs. It is expected that a fully functional system will reduce unnecessary duplicate tests and help speed diagnosis and access to appropriate care. Some $96 million had been spent on the system at the time of our audit, and $210 million in total is expected to be spent by 2012. This amount includes the costs of implementation and adoption as well as the costs of ongoing operations and maintenance.

In our review of this project, we found that it is not yet working as intended, particularly because statutory authority enabling the sharing of data is currently lacking. Our specific concerns were as follows:

- Although the original project approval projected that 80% of laboratory test results would be recorded in the system by March 31, 2009, only 51% were actually being recorded by that time. In addition, the original project approval called for 60% of the province's laboratory test results to be accessible by users by that date, but none are as yet accessible.
- The system was developed primarily by a consulting firm, which delivered its final product to the Ministry in August 2007. However, at that time both the Ministry and the firm realized more functionality was required to meet the needs of medical practitioners, and a number of gaps and defects in the system were identified. During the warranty period, the Ministry focused its efforts on having the firm develop some of this additional functionality rather than fix product defects. In March 2008, when the warranty expired, the system still had 139 identified defects, 40 of which were classified as "requirements" defects because they were associated with the attempts to add more functionality to the original design. Another 72 were considered major defects. The Ministry advised us that it, rather than the consulting firm, had to address almost all of them.
- The system, although technically ready to do so, was not yet providing any data to clinicians. Also, some of its deficiencies were immediately apparent. Although the database had correct data, the viewer often showed errors or blanks, its response times were slow, and at times it displayed the data incorrectly. Early users at hospitals and community labs were experiencing a range of difficulties with the interface, including outright application failure, non-responsiveness, and formatting problems. The Ministry was aware of the poor quality of the system's viewer and informed us that it would not have released it to users if it had been able to develop a better one in time. But because it did not want to delay the current validation work being done at hospitals and community laboratories, it deployed an interface that it called the "viewer of last resort."
- A key objective of the project is for community laboratories, hospitals, and other service providers to be able to share test results regardless of where the test was conducted. No data are currently being shared, however, because the consent management protocols and practices needed to enable such sharing while protecting patient privacy and confidentiality are not in place. As a result, the laboratories and hospitals participating in the early adopter project are doing little more than feeding data into the system and occasionally using it to

check their own data. The system is not giving them any access to laboratory tests conducted elsewhere.

- The provincial roll-out of the system, originally scheduled for fall 2007, is significantly behind schedule. Project staff are still working with a group of three community laboratories and four hospitals to complete an early adopter project that was originally expected to be completed in March 2008.
- The deliverables for the laboratory information system are still evolving, even though the system itself has been developed and is now in the implementation and adoption phase. Two significant recent deliverables added to the project were enabling patient access to the system and integration with the Diabetes Registry, both of which were not originally contemplated.

### Electronic Medical Record Systems

In a 2006 Commonwealth Fund Survey of seven countries, Canada had the lowest percentage of primary-care physicians with EMRs (23%), with only 6% fully utilizing the EMR's potential. The Infoway reports similar data, estimating that fewer than 20% of Canada's primary-care doctors have implemented an EMR system to help manage their practice. Although the use of EMR systems is on the rise (National Physician Survey results for 2004 and 2007, respectively, indicate that the percentage of Canadian physicians using an EMR system has risen from 18% to 26%), it is nowhere near the levels required for the EHR initiative to be fully realized.

In May 2008, the Ontario College of Family Medicine released a discussion document that expressed concern over the lack of an eHealth strategy to ensure that EMRs will integrate effectively with other EHR initiatives. In its view, a key driver of efficiencies from EMRs is interoperability. It also reported that many physicians were unwilling to adopt EMRs because they did not think the network that SSHA built was reliable.

The Ministry indicated that it recognizes that not enough physicians have adopted EMRs and that it has been working to improve the adoption rates for some time. In 2005, in partnership with the Ontario Medical Association, it provided funding to enable an estimated 30% of Ontario's primary-care physicians, or 3,300 of them, to acquire EMR systems. This made Ontario's EMR penetration rate comparable to the average rate of other Canadian jurisdictions.

More than 1,700 additional primary-care physicians had applied for funding by the time the government's initial EMR funding ran out in April 2009. The board of the eHealth Ontario agency recently approved another $100 million in EMR support to continue this initiative. The eHealth Strategic Plan targets a 65% EMR adoption rate by primary-care physicians by April 2012, which it projects will require further funding of $50 million in 2011 and $77 million in 2012. Achieving the target is thus expected to cost more than $225 million.

We acknowledge that primary-care physicians are the most logical current target for EMR adoption strategies. However, there are an estimated 12,700 practice-based physicians (representing close to 56% of the province's physician population) who do not have an EMR system. This includes practice-based specialists who are currently excluded from applying for funding to help them acquire EMR systems. It is believed that some 5,000 of them will eventually require such systems.

An estimated $28,000 subsidy per physician is available under the current EMR funding model. The subsidy covers an estimated 75% of the costs of EMR software and software maintenance, office equipment such as computers and printers, secure network connectivity, and EMR training. If all practice-based physicians are eventually supported under this or a similar program, the total cost to the government of supporting physician adoption of EMRs will approach $450 million.

### The electronic Child Health Network

The electronic Child Health Network (eCHN) is an EMR system originally developed in 1999 under the direction of the Hospital for Sick Children. It provides EMRs for patients under 19 years of age, and by the 2005/06 fiscal year, it was in use at 64 Ontario hospitals. That same year, Ontario launched a project to expand eCHN's availability to key pediatric hospitals, community care access centres, children's treatment centres, physicians, and other health-care professionals. For each patient in its records, eCHN records and stores admission, discharge, and transfer information for all hospital encounters, laboratory test results, diagnostic image reports, other reports (such as those arising from visits to clinics), and a record of medications administered during the patient's hospital stay.

The Ministry provided eCHN with about $28.5 million in funding from 1998/99 through 2005/06. Under its current agreement with the Hospital for Sick Children, the Ministry is providing eCHN with an additional $8 million annually for operational expenses and $200,000 for each new hospital or site connected to it. As of March 31, 2009, 100 hospitals had been connected.

In 2007, SSHA conducted a study to explore the feasibility of expanding the use of eCHN to include the adult population and develop it into the "first-generation" EHR. Although this is still under consideration, the 2009 Strategic Plan is unclear on how eCHN will fit into the EHR initiative.

### The Diabetes Registry

The Diabetes Registry is projected to cost $54 million. The government's original target date for the first release of the Diabetes Registry was April 2009, as indicated in a July 12, 2008, press release announcing its launch:

> The strategy includes an on-line registry that will enable self-care by giving patients access to information and educational tools that empower them to manage their disease. The registry will also give health-care providers the ability to easily check patient records, access diagnostic information, and send patient alerts. The registry is set to come on-line starting spring 2009.

However, this release has not occurred, and the proposed timing of this release of the Diabetes Registry has shifted regularly and significantly. For example, the following documents have provided the following dates for the proposed first release:

- in the August 2008 Report to Management Board of Cabinet—April 2009;
- in the November 2008 project charter—June 2009;
- in the March 2009 eHealth Strategic Plan—April 2010; and
- in the June 2009 eHealth Ontario "rebaseline exercise"—fall 2010.

The expected content of the release has also diminished over time. Original plans to have the first release of the registry available to all Ontarians have been adjusted to a "limited production rollout" to three sites within each of two LHINs. In short, deliverables have been significantly reduced since the government first publicly committed to the registry.

One of the first activities undertaken under the Diabetes Registry initiative has been the gathering of diabetes patient and provider data. This is being done under a sub-project known as the Baseline Diabetes Dataset Initiative (BDDI). Data are being collected under the BDDI manually, at a particular point in time. Unfortunately, there is no mechanism currently in place for updating the information gathered. It is assumed under this initiative that all providers across Ontario will voluntarily provide their patients' diabetes-related information in a timely manner and in the form required to populate the registry—something that remains to be seen. Also, it is not clear how and when the registry will be populated with the data manually gathered during the BDDI.

The Ontario College of Family Physicians expressed concerns about the Diabetes Registry in its *Discussion Document: eHealth and Family Medicine*. It noted that if the registry makes patient management more complex by requiring data to be entered twice (into the registry system as well as into the physician's medical record system, whether that be paper-based or electronic), "the uptake, regardless of incentives, will be limited."

The Diabetes Registry project currently excludes children and uninsured individuals from its scope. Children have been excluded because of unresolved consent-management issues, and we saw no plans for eventually including them in future. Uninsured individuals were being excluded because OHIP's claims information database is being used as the key source for the patient population. No provisions have yet been made to include in the registry, and ultimately in the EHR initiative, those individuals who are not covered by OHIP, such as those Ontarians who receive health-care coverage directly from the federal government (war veterans, inmates in federal corrections facilities, and members of First Nations, the RCMP, and the Canadian forces).

The agency has decided to involve Infrastructure Ontario in the procurement process and thereby attempt to finance the project through the government's Alternative Funding Procurement Model, which typically involves partnering and sharing financial risks with the private sector to the greatest extent possible. As a final point, at the time of our audit, the planned ratio of consultants to in-house staff working on the project of 75:25 has not been met. Reliance on consultants continued to be heavier than planned.

### Integrating the Systems and Linking to a Portal

The system that will integrate the aforementioned applications and information systems and link them to a portal or viewer is known as the "Health Information Access Layer" (HIAL). Development of Ontario's HIAL is currently at the infancy stage.

In the absence of such a system, all of the various applications have been operating independently. One consequence of this is that each project team was incorporating its own privacy and consent controls into its systems, and these efforts were not integrated.

A $237-million integration-services project to provide the foundation for the HIAL by ensuring that all EHR-related systems can share information had yet to start at the time of our audit. A consent-management module to allow patients to partially control how their health information is shared amongst the different systems had also yet to be developed. The request for quotations for building the backbone of this integration system had been rescheduled from January to June 2009, owing to the transition from SSHA to the eHealth Ontario agency.

The eHealth portal project is aimed at developing the on-line interface that will ultimately be the public window to EHR services. The project includes the establishment of standards and processes that will allow for an integrated view of clinical and personal health information. For example, the portal is being designed to make it possible for both clinicians and their patients to simultaneously access—from anywhere and at any time—laboratory test results from the Laboratory Information System and drug profiles from the Drug Information System.

The original plan was for the portal to be fully available by June 2009. This did not occur, and the current plan has revised this as follows:

- The consumer portal, to be focused on providing patients and their families with access to their personal health data and the ability to self-manage certain aspects of their health care, is now projected to be available sometime in early 2011 and as a limited production roll-out rather than the full roll-out originally contemplated. Achieving this will require the integration of registration and log-on services, laboratory test results, the patient's drug history, the Diabetes Registry, health-knowledge

resources, diagnostic imaging, an application to deal with immunizations and vaccine orders and distribution, and an application for managing communicable-disease outbreaks. The next step in this complex process is completing a consumer strategy, slated for December 2009.

- The clinician portal, to be focused on providing clinicians with tools, knowledge, and access to a comprehensive medical history of their patients, is now to be rolled out to only 250 clinicians initially in spring 2010. With this roll-out, the agency plans to provide a more limited range of data than called for in the original plan. The integration of the portal with the Diabetes Registry is now planned to take place in the 2011/12 fiscal year.

### Implementation and Adoption Program

The objective of this program is to support the successful implementation and adoption by the user community for each of the specific EHR applications. Its cost over the four-year period to 2012 is estimated to be $340.6 million.

Originally, $120 million was budgeted to be spent in the 2009/10 fiscal year to facilitate the April 2009 roll-out of the Diabetes Registry, the Client Registry, the Provider Registry, and the portal to all health-care providers in the diabetes circle of care (that is, the primary-care physicians and specialists involved in diabetes diagnosis, treatment, education, and related services) in Ontario's 14 LHINs. This roll-out was also to include consenting patients with diabetes across the province. However, since none of these applications are as yet completed, none of these implementation and adoption plans were under way at the time of our audit.

In summary, Ontario's EHR projects are behind schedule and struggling to deliver on their mandates. As well, integrating them so that they work together to collectively deliver an EHR to the medical community and all Ontarians remains a challenge.

## THE USE AND PROCUREMENT OF CONSULTANTS

Typically, consultants are considerably more expensive than full-time employees—a consultant with a rate of $300 per hour would collect more than $500,000 over a full year. Even the most experienced full-time employees are paid considerably less. Consultants also often carry their knowledge out the door with them when their contract terminates. Ensuring a full and appropriate knowledge transfer from consultants to employees, to enable the employees to operate or continue to develop the systems the consultants worked on without the need for outside help, is often easier said than done.

The primary role of consultants should be to supplement internal resources and provide specialist expertise and advice, usually for short-term periods. Using a consulting firm to build and deliver a complete, fully functional system is also an option. It may in fact appear to be a preferred option in times of hiring freezes, where ministries find it challenging to acquire the resources they need to deal with new strategic initiatives such as eHealth. But this approach has its risks. When it is used, organizations need clear policies and processes for the use of vendors of record and for the competitive selection of consultants. Such policies should require that assignments and their deliverables be well defined up front and that consultants transfer their knowledge to internal staff. This reduces the organization's future dependency on consultants and the risk that consultants will hold the organization to ransom by threatening to walk out the door. In addition, payment arrangements are best based on achieved results rather than billable hours.

It is also critical for an organization to have sufficient technical knowledge in house to effectively oversee and manage the work of its consultants. In previous audits of major government IT projects, we have noted that this was often lacking. We have also noted that a tendency to acquire resources in reaction to immediate rather than long-term needs often contributes to an overreliance on consultants.

## Extent of Reliance on Consultants

The Ontario government launched its EHR initiative in the early 2000s and the eHealth Program Branch was formed in early 2005. Yet we noted that even in 2009 the reliance on consultants at the Ministry and the eHealth Ontario agency was, and continues to be, very heavy. For example, at the time of its amalgamation into the eHealth Ontario agency in April 2009, the Ministry had more than 300 EHR consultants on contract, as compared to 27 eHealth employees. In a 2002 audit of government-wide consulting practices we were also critical of SSHA's reliance on consultants. Since that time, SSHA has improved in this regard and as of September 30, 2008, had approximately 560 full-time employees and 110 consultants. However, as shown in Figure 4, there has been a dramatic increase in the number and ceiling prices of consulting contracts awarded by the Ministry's eHealth Program Branch since the 2002/03 fiscal year, reflecting the Ministry's recent expanded efforts on EHR projects.

We believe overseeing and monitoring consultant performance should be the responsibility of government employees. However, in a number of cases, consultants have been planning, supervising, or managing the work of other consultants. Several ministry senior management positions were held by consultants. Over 40% of staff at eHealth Ontario were consultants, and consultants filled 25% of senior management staff positions. On a combined basis, many EHR consultants have been engaged for a number of years. We noted that a total of $11.3 million has been paid for eight consultants who have been engaged on EHR-related projects dating as far back as 2001.

This use of consultants to fill senior management positions continued even after the eHealth Ontario agency was formed. During the eHealth Ontario agency's transition period, the CEO appointed four new senior vice presidents to report directly to her, and all four of these appointees were consultants. Of particular concern was that one of these consultants was a senior partner with the consulting firm that had been and continued thereafter to be the beneficiary of significant consulting contracts. Specifically, this firm had already been hired by the Ministry to develop the eHealth Strategy. It had further been hired to lead the eHealth Ontario transition process and had also been awarded significant contracts for work on the Diabetes Registry project, the Drug Information System project, and the Client, Provider, and patient-consent registries. We questioned this particular appointment because, at a minimum, it created a perceived conflict of interest between this individual's role in representing and protecting the province's interests as a senior vice president of a Crown agency and the individual's role in furthering the interests of the consulting firm he worked for.

We were also concerned about the extent to which consultants have been engaged in administrative activities, many of which we believe could have more economically performed by salaried staff. Consultants have been paid, at high per diem rates, to prepare, review, and/or edit voice-mail greetings, thank-you letters, internal memos, Intranet pages, seasonal party communications, and documents prepared by other consultants.

**Figure 4: Increase in Consulting Contracts at the Ministry's eHealth Program Branch, 2002/03–January 23, 2009**

Source of data: Ministry of Health and Long-Term Care

| Fiscal Year | # of Consulting Contracts Awarded | Cumulative Contract Ceiling Price of New Contracts ($ 000) |
|---|---|---|
| 2002/03 | 1 | 375 |
| 2003/04 | 3 | 886 |
| 2004/05 | 24 | 4,872 |
| 2005/06 | 18 | 2,825 |
| 2006/07 | 31 | 4,772 |
| 2007/08 | 81 | 10,160 |
| 2008/09* | 328 | 38,252 |
| **Total** | **486** | **62,140** |

* to January 23, 2009

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Professional editing services can be acquired on a contractual basis for rates ranging from $50 to $65 per hour. The eHealth Ontario agency was paying rates in the $300-per-hour range for these services.

We believe the main reason that the Ministry overused consultants was its desire to immediately respond to project work needs. We saw little evidence of well-thought-out long-term planning, such as formal forecasting of the overall EHR resources needed—or even the resources needed on a project-by-project basis—so that the most economical procurement arrangements could be planned for and made in advance. There was no overall plan that combined all of the known future resource requirements over the full time frame of the EHR initiative, despite the initiatives being identified as a government priority as far back as 2000. The Ministry continuously engaged consultants to lead its various EHR project teams, with little effort made to hire internal resources or develop in-house capabilities for managing or executing the projects. In-house staff were regularly recruited only for work relating to administration, policy-making, or finance. And even in those areas, we noted that consultants prepared ministry Cabinet submissions and the budgets necessary to develop the Ministry's results-based plans.

We also looked at whether attempts were made to ensure that knowledge was transferred to in-house staff to reduce the future need for consultants. For 40 of 45 consulting contracts sampled at the Ministry, there was no attempt upon contract completion to assess or evaluate what, if any, knowledge transfer had occurred. We noted that ministry documentation repeatedly used the rationale of "urgency" or "shortage of internal resources with the required skills and knowledge" as a justification for renewing its consulting contracts.

## Procurement at the eHealth Ontario Agency

The focus of much media attention and discussion at the Legislature has been the procurement of eHealth consultants between October 2008 and June 2009. This was the transition period when SSHA's operations and the Ministry's eHealth Program Branch were being amalgamated into the new eHealth Ontario agency. Excluding the value of contract extensions when consultants under contract with the Ministry's eHealth Program Branch were taken over by eHealth Ontario, eHealth Ontario awarded $5.6 million in consulting contracts during this nine-month period. None of these consultants were competitively procured, nor were there documented rationales prepared to justify sole-sourcing the work. The agency CEO arranged for 95% of it, with no procurement or human resources staff at the Ministry or the agency being involved. The CEO basically overrode all of the normal procedures and controls used by SSHA's procurement department. Most of the contracts were signed only after the work had actually begun. One of the most questionable of these contracts was with a recruiting firm hired for $1 million to assist in the filling of 15 senior management positions. This work could clearly have been put out to tender or, at the very least, given to several firms who specialized in recruiting for different functional areas. As well, a typical practice for such contracts is to pay a part of the fee up front, part upon the short-listing of appropriate candidates, and part upon the client's hiring the successful candidate. However, this firm was paid most of the full fee up front. We noted that only five of the 15 positions were filled when the contract was terminated, yet no money was requested by, or returned to, the agency.

The eHealth Ontario agency's procurement policy did require that the CEO "ensure that there are adequate processes relating to procurement and, in particular, to non-competitive procurement." The circumstances allowing for non-competitive procurement were, quite rightly in our view, very limited. They included "an unforeseeable situation of urgency or emergency," situations where "a competitive procurement process could reasonably be expected to compromise eHealth Ontario's confidentiality, cause economic disruption, or otherwise be contrary to the public

interest," situations where it is necessary "to recognize exclusive rights, such as exclusive licenses, copyright and patent rights," and situations where "the goods or services can be supplied only by a particular vendor and no alternative or substitute exists." However, the policy did not require that the rationale behind any decisions to procure services non-competitively be documented. The policy also did not require that management decisions to forego competitive bidding, even for significant contracts, be disclosed to the board or to a committee of the board. Accordingly, the rationale for these decisions was either poorly documented or not documented at all, and the CEO applied these exemptions very liberally.

During the months that the CEO was authorizing these procurements, the board was provided with very little information about them. As indicated by eHealth Ontario's board minutes, on November 26, 2008, the CEO advised the board that "procurement of transition-team resources is being managed according to legacy (SSHA) organizational policies and Management Board of Cabinet principles." We found this to have been somewhat misleading, since the board was unaware that it was the exemptions to these policies that were being applied as opposed to the policies' regular competitive procurement provisions. In this regard, we noted that at the same meeting, the board approved a guideline for the delegation of signing and spending authority, requiring that all commitments and payments with a value greater than $1.5 million be approved by the board. Commitments and payments for lesser amounts could be approved by the CEO alone. However, the guideline also stated that:

> The CEO shall report to the board in writing all commitments and authorization of payments since the last report to the board with a value exceeding $1,000,000 as well as any commitments made and authorization of payments approved of particular importance regardless of value that:
>
> 1. present unusually high business, reputational, or legal risks;
> 2. could bring the Agency under public scrutiny;
> 3. could affect the reputation of the Agency;
> 4. involve controversial matters; or
> 5. involve matters that are not within the ordinary course of business of the Agency.

Despite this clause, the CEO brought none of the sole-sourced contracts that she personally arranged and awarded to the board's attention.

We met with the full board and asked about the extent to which it had been apprised of how these procurements of consultants were being handled. Members of the board advised us that they assumed procurements were being made through standard competitive processes until they became aware of sole-sourcing issues raised in the media.

Although the board was unaware that these transition-related procurements were being sole-sourced, it was aware of a number of ministry consulting contracts being extended without competition upon their transfer to eHealth Ontario. The agency's board was somewhat reluctant to accept these contract extensions, as evidenced in the board minutes for April 8, 2009, which noted:

> a six-month contract extension was provided to consultants who were on contract with the Ministry of Health and Long-Term Care in its eHealth Program. The extension was important to allow for business continuity by enabling eHealth Ontario to retain resources that were deployed in "in flight" projects....The total value of the extended contracts was $36.6 million....The Directors expressed concern over the quantum of the extended contracts inherited from the Ministry.

Aside from the aforementioned transition-period transactions, one of eHealth Ontario's most questionable contracts involved a request for resources issued for privacy work. Not only did the request not clearly disclose the evaluation criteria and their respective weighting, but one of the firms bidding was aware of additional pertinent information that had not been disclosed to the other vendors. This firm had already been paid $25,700 under an earlier sole-sourced engagement with eHealth Ontario. This previous work was intended to be related to communications, but we noted that the actual work done was entirely privacy-related.

This firm was selected as the successful bidder even though its bid price of $3.1 million was more than 500% higher than another qualified bidder's price of $570,000. The bid price was also much higher than the approved budget for the project of $700,000. The eHealth Ontario agency asked only the selected firm to submit a second bid more in line with the approved budget. The firm sent in a revised proposal, reducing its total proposed price to $737,000, reducing the time frame over which the work would be performed from April–December 2009 to April–June 2009, and significantly reducing the resources it would devote to the two main deliverables originally requested in the tender document. We found the scope of one of the main deliverables to be so significantly reduced in the revised proposal that, in our view, it was no longer possible to fairly evaluate it against the original request for resources issued or the proposals submitted by other bidders. However, no such evaluation was in fact attempted, nor was there any communication of the reduced scope of the work to the other bidders to give them an opportunity to likewise revise their submissions. We therefore found the competition process to be unfair.

Further, the firm's original proposal was to employ eight full-time resources (essentially all of its available staff) at rates per person ranging from $2,360 per day for three senior staff, $2,000 per day for three intermediate staff, and $1,600 per day for two junior staff. The revised proposal removed three of these personnel. However, at almost the same time that it submitted the revised proposal, the firm emailed eHealth Ontario an unsolicited proposal that would engage the three consultants removed from the original proposal. The next day, eHealth Ontario prepared an exception-to-competitive-procurement request, and these three consultants were procured on a sole-source basis for $594,000 to work on the additional work proposed in the email, with the work to commence on the same date as the work under the first contract.

The eHealth Ontario procurement policy clearly addressed unsolicited proposals, stating that they are "generally an attempt to obtain a sole source contract from the government and must adhere to the restrictions set out in Section 4.2.7 [the section that sets out the circumstances under which non-competitive procurement is allowed—such as emergency or urgent situations]." The unsolicited proposal for privacy-related services, in our view, fit none of the section's special circumstances and should not have been simply accepted.

There was absolutely no segregation of duties in the process of awarding this work. The same eHealth Ontario executive, who was one of the consultants appointed to be a senior vice president by the CEO, was responsible for the preparation of the business case, the request for resources, the evaluation of the proposals, and the exception-to-competitive-procurement request.

Another issue that concerned us with respect to procurement at eHealth Ontario involved the arrangements for two of the consultants whom the CEO personally hired to serve as senior vice presidents. The CEO set their compensation levels. Each billed $2,700 daily for their services, plus charged for regular flights from Alberta (where they lived), for accommodation in Toronto, and for other expenses such as meals and incidentals. These two consultants were effectively paid at a rate of more than $700,000 annually before expenses for their services until they were abruptly terminated when their compensation arrangements became known to the media. One of them, who was also

paid a total of $78,500 for personal expenses, was afforded especially favourable treatment, in that his contract overrode the agency's Travel and Expenses Policy for employees. This can best be illustrated by comparing his arrangements with those of the other Alberta consultant. eHealth Ontario paid for a "deluxe" one-bedroom apartment for this consultant while the other consultant stayed in a standard one-bedroom apartment. This consultant's daily allowance for living expenses was $75 while the other consultant received $50 (agency policy for employees is a $45 per diem). The first consultant was also paid $1,600 for business-related meals before repaying this amount after a new Travel, Meal, and Hospitality Policy prohibiting consultants from being reimbursed for meals was approved in May 2009. He was further reimbursed for three conference fees, totalling $8,600, and incurred excessive flight expenses. We estimate that if this consultant had travelled as economically as the other consultant, the travel expenses would have been about 20% less, saving the agency $15,500. Both consultants were also reimbursed for a total of $7,300 in personal liability insurance and were granted significant corporate signing authority.

## Procurement at the Ministry's eHealth Program Branch

The Ministry was required to follow the government's established competitive procurement policies. We noted that the Ministry's process for procuring consultants was often more form than substance or was otherwise questionable. For instance:

- Vendor proposals were not properly evaluated for a significant number of the contracts we sampled, and most were approved without sign-off by all appropriate parties. We noted that a single ministry manager chose which vendors to invite and made the sole decision on whom to hire for more than 30% of contracts sampled. Further, some contracts were signed on the same date as the closing date of the request for services. This again suggests that the competition was more procedural than a true search for the best service provider.
- Seven of a sample of 11 IT architecture work contracts, worth almost $2 million, were awarded to a firm associated with a consultant who had been working with either the Ministry or SSHA since February 2000. This consultant was involved in five of these seven procurements by either approving the underlying business case or submitting the resource request form. The total value of these five awarded contracts was $1.3 million. The individual who signed off on one contract, for $687,000, did not have the signing authority for either the contract or the business case. This was detected only when ministry staff attempted to enter the contract into the government's central accounting system and the system rejected it because it was for more than the individual's signing-authority limit. Another of the contracts was awarded after an evaluation that included another consultant from the selected firm as one of the evaluators. This entire process had the appearance of a conflict of interest, and we were surprised that it was allowed to occur.
- The vendor evaluation for six of 12 highly technical IT architecture contracts sampled was performed solely by an administration manager instead of technically qualified staff.
- We noted contracts where the ministry staff who signed them were not properly authorized to do so and where the authorizations were not properly documented. One individual signed 12 contracts totalling $2.6 million that were above his signing-authority limit of $100,000. As with the example noted earlier, this was detected only when the contracts were entered into the government's central accounting system, which rejected them because their amounts exceeeded the individual's signing-authority limit.

- Some consultants claimed and were paid for hours worked on statutory holidays, without documented prior approval as required by policy. We noted the Ministry's eHealth Program Branch office was closed and it was not the norm for these consultants to work overtime hours from home.

We also had concerns about a Management Board exemption from competitive procurement that allowed one consulting firm to get a "foot in the door," which in turn led to its receiving additional contracts. Although this firm was undoubtedly well qualified to assist the Ministry on eHealth matters, the inside position that this firm attained at the Ministry and, later, at eHealth Ontario gave it an advantage over other firms vying for EHR business. For example, this firm helped to develop the eHealth Strategy and led the eHealth Ontario transition process, and a senior partner with this firm acted for a time as a senior vice president of strategy and portfolio management at eHealth Ontario. The details of these arrangements are as follows.

In August 2008, Management Board approved an exemption that allowed for a three-month waiver from competitive tendering for the acquisition of $4.9 million worth of consulting services for contracts relating to the Diabetes Registry, the Drug Information System, the Client Registry, the registry of patient-consent data, and the work needed to integrate the applications and information systems and link them to a portal. The consulting firm in question was initially awarded almost $1.8 million in contracts under this exemption—specifically, a $530,000 contract for work relating to the Drug Information System, two contracts totalling $474,000 for work relating to the Diabetes Registry, and a $789,000 contract for work relating to the Client, Provider, and patient-consent registries.

We noted that this firm was subsequently awarded, through the Ministry's vendor-of-record process, the bulk of the ongoing work for both the Diabetes Registry and Drug Information System projects as they moved from one phase to another. The Ministry parsed this work into multiple small contracts of less than $300,000, thereby bypassing certain ministry procurement requirements (contracts for more than $300,000 required review by the Supplies and Services Branch and, until July 1, 2008, sign-off at the assistant deputy minister level, and contracts for more than $750,000 had to be tendered for open competition rather than be awarded via the Ministry's vendor-of-record process). Over a 24-month period, the firm was awarded 10 of 13 Drug Information System contracts—with a value of $4.1 million out of a total $4.3 million worth of work—and, over an eight-month period, eight of 11 Diabetes Registry contracts—with a value of $2.9 million out of a total $3.2 million worth of work. If all of the work on each project had been combined, the Ministry would have had to use an open tendering process.

In addition to our concerns about the practice of splitting work on each project into a number of smaller lower-value contracts, we had other concerns with the Ministry's procurement practices relating to this firm:

- The requests for services for two of the Diabetes Registry contracts did not adequately describe the scope of the proposed work. As a result, the bid prices received varied widely—between $60,000 and $600,000 on one contract. The consulting firm in question submitted the highest bid and was awarded the contract. The Ministry had minimal documentation to justify its awarding the contract to the highest bidder.
- For five of the awarded contracts, the Ministry was billed and paid $490,000 for work done prior to the contract start dates, with work commencing as far back as two months before the contract start dates. Work being performed prior to contracts being awarded is an indication that a competition is more of a formality than a true search for the best service provider.
- We noted for the Drug Information System contracts that only one of the competitions

went beyond the first evaluation stage and the questions asked of bidders in this competition largely related to work done under a previous contract that had been awarded to the consulting firm. This put that firm at a considerable advantage in the competitive process. We also noted that the price quoted was not considered as a factor in the final evaluation, even though this is required by Management Board directives and the requests for services scoring information provided to vendors indicated that the price would be considered. The successful bidder, which again was the consulting firm in question, initially quoted a total fee that was higher than both the competing bid and the amount that the approved business case said was needed to obtain the deliverables. The firm was awarded the contract regardless and subsequently reduced its fees to align with the business case.

- We also noted that the firm being awarded this work was at times in communication with ministry management about upcoming contracts and contract renewals before the requests for services were released to other service providers.
- When an organization becomes heavily reliant on a particular consulting firm, there is always the risk that the firm will be able to use its privileged position to increase its fees. We found this to be the case here. In September 2008, new vendor-of-record arrangements were put in place, and we noted that the firm raised all of its vendor-of-record per-diem rates by between 34% and 87%, depending on the position. For example, one consultant's per diem increased at that time from $1,523 per day to $2,850 per day, with the justification being that the consultant was working on higher-valued services. It is extremely difficult for ministries or agencies to challenge fee increases by entrenched consultants given the threat that they might walk off the job and leave the project in limbo.

To sum up, although the Ministry's eHealth Program Branch seldom sole-sourced, we noted far too many instances where the competitive process for procuring consultants was more form than substance. Also, recurring contract renewals were all too common. In these instances, the two most common justifications for renewing contracts with the incumbent consultants were:

- the consultants were already familiar with eHealth operations; and
- rehiring the consultants would mitigate the risk of project delays or diminished service levels.

In most of these instances, we did not agree that these almost routine renewals met the intent of the government's policies on the use of consultants. The end result of the repeated use of these justifications was that qualified consultants who were not already working on the EHR initiative were unable to compete fairly for contracts.

## Procurement at SSHA

SSHA also relied heavily on consultants, but much less so than the eHealth Ontario agency or the Ministry. In our view, SSHA was making the most concerted attempts of the three organizations to minimize its use of consultants and become an organization predominantly staffed by full-time employees.

Nevertheless, we found that SSHA did not always follow proper competitive procedures when acquiring consultants. We reviewed a sample of files having a value of $11 million, where $10.5 million was for consulting services and $500,000 was for goods and services. About 70% of these purchases—valued at $7.4 million—were sole-sourced. In our view, this non-competitive procurement was adequately justified for only three of these files, worth $2.7 million. The justifications provided for sole-sourcing the remaining $4.7 million of procurements did not meet the requirements of SSHA's sole-source procurement policy. For about $1 million of these

procurements, there was no documentation justifying the sole-sourcing. For another $1 million, the only reason cited was "urgency," and in those cases we did not accept that these "urgent" situations could not have been foreseen (under SSHA's policies, sole-sourcing was allowed for only those urgent situations that were unforeseeable). The reason for sole-sourcing the remaining $2.7 million was the consultant's previous experience with and knowledge of the project. This was not a sufficient justification for non-competitive procurement under SSHA's policies.

We also noted that for over 20% of these procurements, there was no business case or any other evidence that SSHA had considered other options before deciding to hire consultants. And for 25% of the procurements, neither the contract nor the business case (if there was one) had specified deliverables. For another 30% of the procurements (covering six files), the contract deliverables were too vague for consultants not already familiar with SSHA's operations to knowledgeably bid on the work.

Finally, we also found that consulting contracts were repeatedly extended or renewed. Almost 40% of the consultants contracted by SSHA that we reviewed had been with SSHA for a considerable length of time, with the average being two years. Our concerns included the following:

- SSHA initially engaged one consultant for a $32,000 deliverable. It then continued to renew his contract over a two-year period, eventually paying the consultant over $500,000.
- SSHA initially engaged one consulting firm on a contract valued at $86,000. This firm was awarded renewals and extensions worth more than $600,000 over the following year. It was eventually paid a total of $710,454 over the period from June 2006 through March 2007, with no documented justification for any of the additional work beyond the initial contract.
- Some consultants appeared to, in effect, arrange their own contract renewals. One consultant who started working in December 2006 on a three-month contract, and who had her contract previously renewed several times, proposed her own deliverables for her October 2007 contract renewal. These were accepted as written. Another consultant submitted suggested deliverables that were then copied into the ministry business case justifying his hiring. The process was repeated when his contract was renewed.
- Purchase orders, which should be issued before a contract is finalized, were often approved after contract work had commenced. We found this to be the case in over 30% of purchase orders reviewed. For example, one purchase order for $271,000 was approved in April 2007 but all contract costs were incurred before March 31, 2007. Another purchase order for $737,000 covered contract costs for the period from April 2007 through September 2007 but was not approved until June 1, 2007. A third purchase order for $44,100, for contract work taking place from August 1, 2007 to October 4, 2007, was approved on the date the contract expired. A fourth purchase order was approved on November 21, 2008, for $107,000—but the work it covered began more than seven weeks earlier, on October 1, 2008 (extending to March 31, 2009). We also noted invoices paid that were for higher amounts than the purchase order specified. In one case, the invoice amount exceeded the purchase order by $8,700.

We further tested 280 invoices from 15 different consultants associated with 64 purchase orders issued from April 2006 to March 2009, and we noted that only 16 of the purchase orders were original requests for consulting services, with the remainder being contract extensions. The extensions involved increases in both the scope of the work and the time and resources allotted to complete the work. In one case, SSHA had acknowledged as early as June 2006 that it was overrelying

on consultants for the work on a certain project and that it should try to complete the project with internal staff—yet it continued to extend consultant contracts until March 2008.

## RECOMMENDATION 3

The eHealth Ontario agency and the Ministry of Health and Long-Term Care should develop a project-resourcing plan that ensures that, over time, internal staff with an adequate depth of technological expertise are hired to oversee the completion of the Electronic Health Record initiative. The plan should incorporate the following principles:

- Requests for proposals for consulting services should include clear project deliverables with expected time frames for their completion so that all bidders have sufficient information to make informed proposals.
- Formal information technology life-cycle development processes—including processes for identifying project risks and developing strategies to effectively mitigate those risks—should be in place.
- There should be oversight of consultant billings and the billings should be evaluated against project progress. Consultant contracts should also be structured such that significant payments are contingent on satisfactory delivery and that consultants share the risk if commitments regarding deliverables are not met.

## MINISTRY RESPONSE

The Ministry and the government acknowledge that sound controllership and accountability are critical to proper financial management and expenditure control. As a result of recent events, the government, the Ministry, and eHealth Ontario have implemented a number of policy and procedural changes to improve accountability and restore the public's confidence.

Beginning in 2007, the Ministry consolidated eHealth-related initiatives across the Ministry under the authority of a single assistant deputy minister. The Ministry acknowledges that fee-for-service consultants were engaged to support both the planning and implementation of these initiatives. Recently, the Ministry created an eHealth Liaison Branch to provide ongoing oversight of eHealth initiatives. This branch will be staffed by employees of the Ontario Public Service. eHealth Ontario is also in the process of reducing its reliance on consultants through a fee-for-service conversion process and a recruitment drive.

The Ministry has already begun to address and correct all of its procurement practices: it has created the Financial Management Branch to provide oversight of consulting services, restructured its Supply and Financial Services Branch to enhance oversight capacity for all procurement within the Ministry, and instituted mandatory procurement training for all management staff.

## EHEALTH ONTARIO RESPONSE

The eHealth Ontario board's approved annual business plan will serve as the foundation for all project resourcing. Included in the development of this document was a staffing review where the workforce was examined and positions that had previously been held by fee-for-service consultants were targeted for conversion to full-time employment status. This re-balancing of the workforce will provide eHealth Ontario with the appropriate depth of expertise in its workforce and ensure continuity of knowledge transfer in a complex technology environment.

The board has also approved procurement policies that lay the foundation for improved articulation of expected consultant performance and evaluation of consultant work. These expectations are now documented in contracts with consultants. Financial controls have also been put in place to ensure that payments are

based on performance and the achievement of results by consultants as described in the contract and in compliance with eHealth Ontario's procurement policies.

In spring 2009, the board also approved the I & IT Gateway Policy, which provides a gating mechanism to ensure large, complex technology projects meet specific project objectives as they move through the appropriate phases of the project life cycle.

## EXPENDITURE MANAGEMENT

Neither the Ministry's eHealth Program Branch, SSHA, nor the eHealth Ontario agency had properly functioning systems for approving and monitoring payments. For example, we found that over 20% of the invoices paid for transition expenditures by the eHealth Ontario agency from October 2008 to June 2009 were not properly approved or were paid without proper documentation being obtained to ensure that contract deliverables had been completed.

We also tested a sample of expense transactions at SSHA for the period from April 2006 through March 2009. We found that in almost 40% of the cases where an assessment of alternative vendors was warranted, the documentation available was insufficient to support the vendor selected. These contracts were worth $1.8 million. In addition, procurement records were poorly organized. Many of the business cases or other supporting documents could not be found.

We noted similar results in our test of 280 invoices paid by SSHA reported on earlier. Specifically:

- The procurement records were poorly organized. Staff could not locate 22 of the 280 invoices. Consequently, we were unable to verify whether these payments had been properly authorized or recorded.
- The majority of the documents supporting invoice payments consisted of timesheets with little explanation of what work had actually been done by the consultants. Most timesheets simply identified the role of the consultant in the project, making it difficult for management to determine whether the consultant met his or her targets and what work had actually been accomplished.
- We also noted billing rate increases and billing errors as contracts were extended and renewed:
  - One consultant's rates increased from $1,100 per day to $1,500 from one purchase order to the next with no reason provided.
  - One consultant had been charging and was being paid $1,500 per day since March 2007. His contract was for $1,300 per day. SSHA staff noticed the overpayment in November 2007 and identified a total overpayment of $30,050. But management decided that no action should be taken and continued to pay the higher rate to the consultant until the contract ended in March 2008. The total amount of the overpayment was $45,750.
  - A contract with one consulting firm allowed it to charge $1,160 per day for one consultant and $1,060 per day for the others. However, we noted that two consultants were charging and being paid the higher rate.
  - One consultant charged for the same day on two different invoices, and both invoices were paid.
  - Over a six-month period, one consultant was paid a total of $42,000 to be on call. The eHealth Ontario agency used what we believe to be a more appropriate formula for calculating the amount to be paid for such work, and over a comparable six-month period, payments to the same consultant for being on call dropped to $1,900.
  - As noted earlier, project expenditures and deliverables were tracked separately. The absence of a high-level process to facilitate

comparison of costs to work completed made it all the more essential that adequate oversight mechanisms be in place to ensure that consultants were completing the work they were being paid for. In far too many cases, the necessary review and approval controls were lacking.

Other examples of bypassed controls and lack of appropriate expenditure management included the eHealth Ontario CEO regularly approving her own expense claims rather than submitting them to the Chair or the board. As well, $197,000 was paid to a consultant, at a rate of $1,710 per day, for providing "executive assistance" to the CEO. She was terminated only after this arrangement was reported in the media.

We also sampled 20 jobs at the eHealth Ontario agency, comparing their rates of pay with those for similar jobs in the Ontario Public Service (OPS). For 19 of them, the maximum of the eHealth Ontario job's salary range exceeded that of the comparable OPS job by an average of 31%.

These and the examples provided earlier have damaged the reputation of the eHealth Ontario agency. The agency is now faced with regaining the support and trust of clients and other stakeholders. It must also repair the morale of staff, who have lived through extended periods of uncertainty during which the agency's governance and senior management structure has frequently changed. Improved procedures and policies must be formulated and adhered to. A start was made in July 2009, with Management Board of Cabinet's approval of a new Procurement Directive requiring, with few exceptions, that all consulting services, irrespective of value, be competitively procured, and an addendum to the Travel, Meal and Hospitality Expenses Directive that prohibits ministries and agencies from reimbursing consultants for meal, hospitality, and incidental expenses. As discussed earlier, eHealth Ontario management has also taken a number of steps to improve the agency's practices in these and other areas.

But most importantly, eHealth Ontario, with appropriate oversight and guidance from both the Ministry and what we believe to be a well-qualified board, must now work at overcoming the challenges of completing and integrating the many application and database projects for which it is responsible so it can achieve the goal of delivering an Electronic Health Record system to Ontarians by 2015.

## RECOMMENDATION 4

The eHealth Ontario agency and the Ministry of Health and Long-Term Care should establish appropriate review and approval mechanisms to ensure that procurement policies are followed and that any exceptions to such policies are made for sound and defensible business reasons and approved at an appropriate level. Significant exceptions should require board approval and be reported to the Minister of Health and Long-Term Care.

## MINISTRY RESPONSE

The Ministry and eHealth Ontario fully support the findings of the Auditor General's report and have already made changes to policies and procedures relating to procurement.

## EHEALTH ONTARIO RESPONSE

In the past months, strengthened procurement, conflict-of-interest, delegation-of-authority, and whistleblower policies, among others, have been approved. In addition, a review of current contracts has been conducted and a calendar of future procurements is being developed to ensure that, prior to the expiration of current agreements, a competitive procurement process can be conducted.

The Interim Chief Executive Officer will also develop a quarterly review process that will enable senior management to provide the board with a signed declaration that all policies relating to procurement have been followed.

# Appendix—Chronology of Events Relating to the Electronic Health Record Initiative

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| April 1996 | • Ontario government forms a Health Services Restructuring Commission to provide a framework and make recommendations for restructuring Ontario's public hospitals and health service delivery system<br>• Commission identifies lack of integration, lack of health information, and difficulty in sharing health information as key problems |
| June 1999 | • Commission submits the *Ontario Health Information Management Action Plan* to Minister of Health and Long-Term Care<br>• Action Plan recommends acceleration of information and technology investments so that health-care information can be better captured, shared, and analyzed<br>• Action Plan envisions "an integrated health information network with an electronic consumer record at its core"<br>• Action Plan also recommends creation of an independent, arm's-length entity to provide strong central leadership, manage implementation of action plan, and allocate financial resources |
| September 2000 | • First Ministers agree "to work together to strengthen a Canada-wide health infrastructure to improve quality, access, and timeliness of health care for Canadians"<br>• First Ministers also commit to develop Electronic Health Records and the common standards necessary to ensure the future compatibility of all the jurisdictions' health-information networks |
| 2001 | • government of Canada creates and funds Canada Health Infoway as an independent, not-for-profit Shared Governance Corporation<br>• Infoway's members are Canada's 14 federal, provincial, and territorial deputy ministers of health<br>• Infoway's mission is to accelerate the development of electronic health information systems (such as Electronic Health Records) on a pan-Canadian basis<br>• Infoway's goal is that 50% of Canadians will have an Electronic Health Record by 2010 and 100% will have an Electronic Health Record by 2016 |
| 2002 | • Ontario government creates the Smart Systems for Health Agency (SSHA) by regulation under the *Development Corporations Act*<br>• SSHA begins operations in April 2003 with a mandate to support Ministry of Health and Long-Term Care programs; it begins to build a private network to connect Ontario's medical community |
| 2004 | • Ministry's eHealth Program Branch created to establish and maintain an eHealth strategy and oversee its delivery, including the development of EHR applications and databases |
| 2005 | • SSHA's mandate clarified by regulation to one of providing and operating secure infrastructure to enable secure transfer of personal health information among sector providers and hosting personal-health-information applications |
| November 2006 | • Deloitte Consulting completes critical operational review of SSHA, commissioned by the Ministry of Health and Long-Term Care and SSHA's board of directors—by this time SSHA has some 1,400 network circuits deployed, costing more than $500,000 monthly to maintain |
| March 2007 | • Infoway's 2007/08 corporate business plan projects that, in terms of EHR progress, Ontario will be ahead of Northwest Territories, Yukon, and Nunavut but behind all provinces by March 31, 2008 |
| August 2007 | • Office of Auditor General of Ontario reviews SSHA's efforts to address certain of Deloitte's key recommendations and notes progress made in some areas while more work required in others<br>• Auditor General's review identifies lack of an overall government eHealth strategy and Ontario's slow progress in overall Electronic Health Records achievements as continuing issues<br>• federal and provincial Auditor Generals discuss possibility of collaborative audit of electronic health records |

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| September 2007 | • Ministry and SSHA sign an Affirmation of their Memorandum of Understanding<br>• SSHA's mandate is to provide "the secure, integrated, province-wide information technology infrastructure to allow electronic communication among Ontario's health service providers" |
| June 2008 | • SSHA strikes a client experience task force to improve services to and relationships with clients, which identifies SSHA's poor understanding of its customers and poor performance issues as key problems |
| August 2008 | • Ministry makes submission to Management Board of Cabinet, seeking and obtaining approval for "the establishment of an Electronic Health Record of clinical information for every patient, and that could be controlled by the patient, by 2015" |
| September 2008 | • federal and five provincial Auditor General offices agree to conduct a collaborative audit on Electronic Health Records initiatives across Canada, with each jurisdiction issuing its own report<br>• federal Auditor General is to combine observations from these reports with its own work on Canada Health Infoway operations and issue a Canada-wide report in 2010<br>• Ontario government creates the eHealth Ontario agency to combine the activities and responsibilities of SSHA and Ministry's eHealth Program Branch into one organization responsible "for all aspects of eHealth in Ontario, including creating an Electronic Health Record for all Ontarians"<br>• Ontario government also forms the eHealth Ontario agency's first board; no members from SSHA's board are invited to join the eHealth Ontario agency's board; Premier appoints board Chair |
| October 2008 | • Premier supports Chair's request regarding appointment of CEO after meeting with Chair's recommended candidate<br>• Order-in-council is issued making CEO's appointment official |
| March 2009 | • Canada Health Infoway's 2009/10 corporate business plan shows Ontario still lagging behind all provinces (although ahead of Northwest Territories, Yukon, and Nunavut) in developing Electronic Health Records<br>• Canada Health Infoway's business plan indicates that 17% of Canadians have an Electronic Health Record available to their health-care provider<br>• Ontario government's eHealth Strategic Plan published<br>• Strategic Plan describes activities to be undertaken from 2009 through 2012 and sets target of delivering a fully functional Electronic Health Record system by 2015 |
| April 2009 | • Ministry and eHealth Ontario sign a Memorandum of Understanding and a Transfer Payment Agreement setting out their respective accountability |
| May/June 2009 | • significant controversy over possible sole-sourcing of consultants and related costs erupts in the Legislature and the media |
| June 2009 | • eHealth Ontario agency's CEO and board Chair resign |

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